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Defense Management Journal

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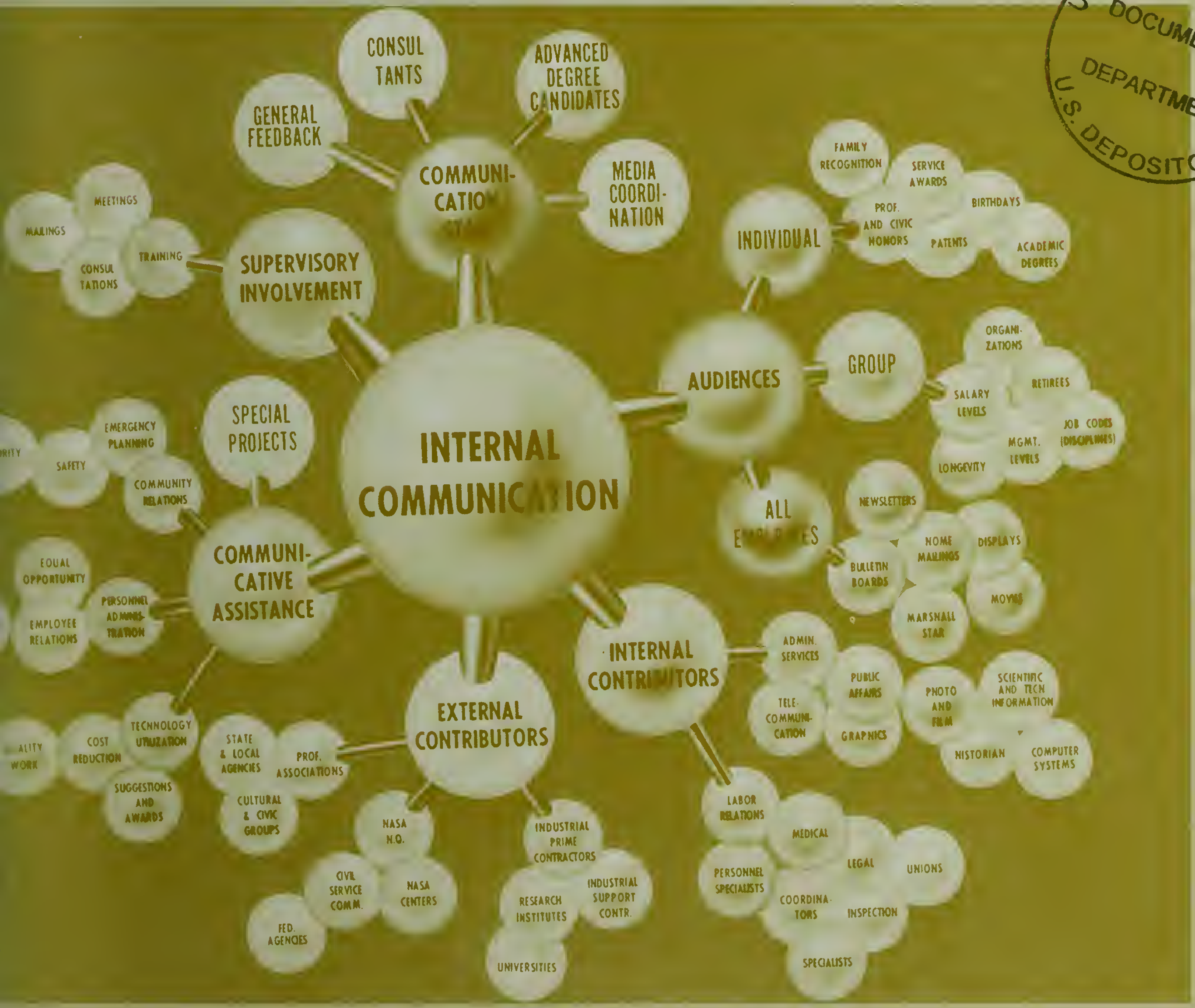

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Defense Management Journal

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Honorable BARRY SHILLITO
Assistant Secretary of Defense
(Installations & Logistics)

Mr. GEORGE E. FOUCH
Deputy Assistant Secretary of Defense
(Logistics Management Systems and Programs)

Mr. HARRELL B. ALTIZER
Director for Cost Reduction and
Management Improvement Policy

Editor	EDWARD E. OPPENHEIM
Associate Editor	JAMES E. McCANNELL
Art Director	ALEX DELLA-VALLE

Contributing Editors

Army (Raymond C. Chase, Jr.) OX 4–4340 (ac
Room 3D578, Pentagon, Washington, D.C.
Navy (Oliver G. Green) OX 6–4393 (ac
Room H–116, Main Navy Building, Washington, D.C.
Air Force (S. M. Funk) ...... OX 7–6034 (ac 202
Room 4E269, Pentagon, Washington, D.C.
DSA (L. M. Sundquist) OX 4–6493 (ac
Room 3C390, Cameron Station, Washington D.C.

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EDITORIALS

Bridging the "Involvement" Gap

Maybe we misjudge the times, but our impression is that minds meet today with much less than socially desirable frequency—so much so that even ordinarily disinterested bystanders ask "How come?"

How else can we explain six authors with a *communications* message in this issue of the Journal? We didn't plan it that way—nor even plant the seed. It just happened.

Three articles make the point that what is being told right is being heard wrong and what is being told wrong is not being heard at all.

- The Commandant of the Marine Corps reports that Marine recruiters face antimilitary activities on almost 25 percent of the 1,100 campuses they cover.
- A youthful executive for the Commonwealth of Pennsylvania observes that government's on-campus recruitment for civil service trainees is ineffective.
- A NASA communications specialist says most bureaucrats do not know how to get their points across.

Obviously, a lot of people are not reaching each other.

Not all, however, is bleak. Three other Journal articles offer hope and some practical advice.

- A Defense official states that progress is made in the "crucible of conflicting analyses."
- A university vice president points out that some organizations are setting up departments to reduce the "implementation gap" between information, new ideas and action.
- A civil defense planner describes a successful venture in "cooperative federalism."

Some of the thoughts expressed make strange bedfellows. A representative of a highly structured organization—the Department of Defense—promotes "participative management" while an academician in the much looser amalgam of the university deplores "management by consensus." Then, again, perhaps these concepts are compatible—given the catalyst of leadership.

One point is common: The chasm between communications theory and practice.

- The specialist at NASA says: "Indeed, it is almost funny, if it were not so sad, that many of the centers of so much wisdom in this field have the greatest communications gaps among their major factions: students, faculty and administration."
- The academician says: "Quite often a university becomes a loose collection of competing departments, schools, institutes, committees, centers and programs, largely noncommunicating because of the multiplicity of specialist jargons and interest and held together, as Robert Hutchins once said, chiefly by a central heating system."
- The observer in Pennsylvania notes: "When the State recruits, we hand out pamphlets that students don't bother to read."

The solutions, too, have intellectual kinship.

- The young administrator opts for "constructive discontent" within the bounds of systems stability.
- The Defense official calls for "channeled conflict."
- The academician likes the term "managed conflict."

In a word, all urge "involvement"—involvement of the young trainee in the real (not make-work) problems of the organization; involvement of the boss in the earthier give-and-take of informal discussion (rather than sterile, well rehearsed pitches in the inhibiting environs of the conference room); involvement of the "team" in key decisionmaking.

An old saying goes: "It matters not what is said, but how it is heard." Involvement, these articles say, improves hearing.

"Eliminate Cost Reduction"

Lately, it seems, every blue Monday's mail carries a missive from another self-convinced discoverer of the wheel. The suggestions go this way:

> "Do you want a big cost reduction? Simply eliminate the cost reduction program. It costs good money to report and audit cost reductions. Yet, a cost reduction is just as "real" without a report and audit. Let the beneficial suggestion program take care of recognizing individuals who reduce costs."

We suspect that audit-rejected "cost reductions" underlie most letters of this ilk. Be that as it may, impugning motives is no way to answer questions. So we invariably respond at length with the utmost courtesy, diplomacy, tact, etc.

Then the thought occurred that editorializing the substance of our replies in the Defense Management Journal might spare us part of our mail-answering chores. So, herewith the substance.

Our correspondents assume that—

- Recognizing individuals is the sole or primary purpose of the program.
- Quantity and quality of cost reductions would continue high without the program.
- Recording a saving (via reports) and proving its validity (via audit) serve no worthwhile management function.
- The program costs too much to administer.

These assumptions arise from a lack of understanding of the program's basic purpose. That purpose is to improve logistics management by: (1) Pinpointing logistics areas requiring special management attention; (2) appraising organizational and functional performance in reducing costs in those areas; (3) providing a data base for formulating policies that correct logistics shortcomings; (4) obtaining a basis for projecting managerial goals; (5) cross fertilizing management improvement ideas; and (6) stimulating organizational and functional management performance.

Recognizing individual achievement is only one aspect of the last mentioned medium (No. 6) for improving logistics management. The cost reduction program relies primarily on the following techniques to motivate performance:

- Allocating dollar savings goals among organizations and functions.
- Spelling out specific means (techniques, methods, practices) for attaining results.
- Holding the head of an organization (not individuals or groups within the organization) responsible for the organization's cost-reduction performance.
- Making organizational and functional progress highly visible to top management.
- Feeding back analyses of shortfalls against goals to the responsible commander.
- Applying top management emphasis on compliance with program objectives and principles.
- Training and indoctrinating intermediate and lower level management (not only in principles and operation but also in the logistics management specialties that contribute to the results).

The second assumption is that the quantity and quality of cost reduction actions would remain the same without the program. It is always an exercise in futility to try to compare recent performance that is measured with past performance that has never been measured. No one is in a position to prove that results would be the same without the program's incentives (listed above). However, we do know that the cost reduction program reports many times more measurable savings than the incentive awards program—and achieves that record despite the fact that not all measurable savings reported in the incentive awards program qualify for acceptance against the strict standards of the cost reduction program.

The third assumption is that reporting and auditing serve no worthwhile management function. First and foremost, report and audit serve the cause of credibility which, in turn, gives the program its integrity. Program integrity makes the cost reduction effort a mirror of realistic management progress by weeding out questionable claims. Second, when you consider that the data developed in the program is used in budget formulation and in analyses of management progress, the need for relatively reliable figures becomes obvious. Third, the use of cost reduction goals as a motivator to the efficiency of managers calls for a credible gauge. Managers who face savings goals may be inclined to stretch a point now and then. That is why meaningful cost reduction programs have auditors.

As for costs of administration, a few years ago a study showed that these amounted to a fraction of 1 percent of total savings realized.

Has the program worked? Not long ago, the Comptroller General of the United States said: "GAO believes the extension of DoD's cost reduction program on a government-wide basis was due in large part to the results attained by the thousands of managers throughout the Department of Defense in response to efforts to ferret out all sources of waste and inefficiency."

Is the program well-formulated? A recent report of the General Accounting Office states: "We believe that the features of DoD's program which we reviewed are generally designed to achieve the program's primary purpose, which is to stimulate the initiation of positive management improvement actions."

What does top management think of this program?

- Secretary of Defense Melvin Laird said recently: "We have * * * applied new emphasis to our in-house cost reduction program, from which we should realize over $1 billion in audited in-house savings this current fiscal year."
- Deputy Secretary of Defense David Packard, in a memorandum to the military departments and major Defense agencies, stated: "In my view the cost reduction program is an effective tool for motivating your mangers and evaluating their performance."
- Assistant Secretary of Defense Barry Shillito, the Defense Department's top logistician, describes the program as "a prime observation post"—one that "shows how well management—up and down the line—has been able to recruit the talents of all of our people to the vital mission of supporting our combat forces more effectively and at less cost."

We might also add that a large number of industrial firms have cost reduction programs much like our own in Defense.

That, sir, is our case. We do not expect it to make believers of everyone, but we sincerely hope it will move some cynics and skeptics a trifle closer to openmindedness.

Sometimes there is backfire. We recall a letter we received in response to an earlier editorial on the same subject. The letter said: "OK, your editorial convinced me. However, I have another beneficial suggestion. Why not eliminate the Defense Management Journal?"

There just is no forestalling blue Monday.

That Impersonal Statistic

Some people have a "thing" about formal cost reduction reports. Charts, tables and reams of figures just do not grab them. Too bloodless, they feel. We agree.

No savings statistic ever did justice to:

- The military instructor who filched spider webs from live black widows for use as crosshairs in topographic instruments (Savings: $4,150 a year).
- The industrial specialist who scrubbed mountains of T-shirts in his wife's washing machine to prove that hems with 9 stitches to the inch withstood the pounding as well as hems with 10 stitches to the inch (Savings: $79,800).
- The sergeant who baited a fishing rod with magnets to lure radioactive capsules from source wells—and thus did away with the previous cumbersome, time consuming retrieval process (Savings: $2,100 a year).

Ah—that's the ticket! It's the people treatment that turns us on. Not people in the impersonal abstract like the 25 to 30 thousand who innovate cost reductions for Defense each year, every year—but people in the personal particular from Hawaii, Alaska, Thailand, England and where-have-you, like—

- Pearl Harbor's Kai Fong Wong, a marine engineer, who aimed a portable hair dryer through dry ice to air-cool in a jiffy sensitive thermostats and humidistats in submarines. His contraption did away with the usual days-long wait for climatic changes to occur for testing and checkout (Savings: $1,800). This idea, though, did not upstage Pearl Harbor's Charles D. Edmunds, an electrical mechanic, who dosed sonar transducers with castor oil to fill voids in pitted resonators so that he could rescue them from the scrap heap (Savings: $200,000).
- Spc. E7 Jackie Hefner at Fort Richardson, Alaska, who stopped air loss (and saved re-testing time) when inflating thermal boots by fitting the pump hose directly over the boot's valve stem instead of using the usual adapter to couple the hose to the valve.
- In Thailand, Maj. Kirk Ehlers discovered that corrugated sheet metal shutters for windows of jungle huts cost no more and lasted three times longer than native-made thatched shutters.
- And in Alconbury, England, T. Sgt. Francis D. Moore developed a special tool to permit damage-free removal of Pitot static tubes and sleeves from RF-4C aircraft, cutting replacement rates $55,000 a year.

Some of the innovators were quite young—like the 21-year-old mechanical engineering assistant (Sp 5 Bernd W. Kliem) who helped the Army develop a lower cost, more effective smoke rocket (Savings: $625,000). Some were slightly more senior—like seamstress septuagenarian Martha Ellis at Ft. Lewis, Wash., who reduced rips in sleeping bags by relocating the strain points on the binding straps.

True, there were material compensations: $1.3 million in cash awards to uniformed personnel in calendar year 1967 and $9.8 million to civilians in fiscal year 1968. Among the military were:

- 34-year-old T. Sgt. Charles D. Cooper of Scott AFB, Ill., who received $1,200 for shortening from 4 hours to 40 minutes the time it takes to set up and test a Tactical Air Navigation Unit (TACAN)—(Savings: $129,800).
- Air Force Lt. Chesley S. Pieroway, who received $5,400 for working out a way to modify MINUTEMAN launch control centers for $400,000 instead of redesigning them for $4.8 million.

(*Continued on page 48, EDITORIAL*)

CONTRASTS IN CHARACTER—ON CAMPUS AND OFF

By **GENERAL LEONARD F. CHAPMAN, JR.**
Commandant of the Marine Corps

"For those who have fought for it, life has a flavor the protected never know."
—Foxhole sign, Khe Sanh, South Vietnam, 1968

THE PUBLIC dispute over the war in Vietnam manifests a growing disenchantment with the military establishment of this country.

I want to share some of my views with you on that disenchantment as it relates to demonstrations directed at military recruiters on campus.

Campus Recruitment Declines

For a number of years, the Corps has depended upon recruiting on college campuses to provide nearly 85 percent of all new Marine officers. This gave us a valuable cross section of educated young Americans—young leaders from every part of this Nation who brought with them fresh skills and fresh ideas. Their influence was important not only to the young Marines they commanded, but also to the senior career officers who commanded them.

The antimilitary activities at some colleges have gained such recognition by school officials that the Marine Corps has had to seriously curtail on-campus recruiting. The Marines actively seek officer candidates on nearly 1,100 college campuses and today at nearly one out of four of them we have run into some difficulty. At some colleges the antimilitary efforts have taken the form of physical obstruction of legitimate Marine officer selection teams. On other campuses, college administrators have displayed a lack of cooperation, failing to make available adequate time and central locations to Marine recruiters.

Threats Stifle Communication

There is no question that the student protests against the presence of Marine Corps and other service recruiters on the campus along with apparent lack of cooperation by college administrators have had a marked effect on the number of college graduates who might otherwise seek a commission in the Marines or the other services.

In the school year ended in June the Corps fell more than 700 men short of a total requirement approximating 4,000.

In many instances, prospective applicants for a commission in the Marine Corps or the other services have been so heckled and embarrased by the vituperative remarks and jeers of their protesting fellow students

that they have abandoned attempts to seek information for a military career following graduation.

In other instances, school administrators in fear of actual or threatened demonstrations have assigned the military recruiters to interview areas far out of the route of student traffic and away from student centers of activity. These tactics have seriously affected the number of officer applicants in the Marine Corps.

Colleges Important Recruitment Source

We commission nearly 100 officers from the Naval Academy each year, and we receive another 200 or so from the colleges where we participate in the Naval Reserve Officers Training Corps—and we also commission outstanding young Marines from the ranks.

But we depend upon hundreds of colleges all over America to furnish us with the rest of the nearly 4,000 young officers we require annually.

In all, close to 85 percent of our junior officers come to us directly off the campus—and that is one of the little known strengths of the Marine Corps.

Just as the average young enlisted Marine is the product of 18 to 20 years of exposure to our civilization's goals, objectives, and attitudes as reasoned and explained by his parents, teachers, and clergymen, the young officer is generally a more educated product of the same system.

Each of our young officers brings to us unique experiences, background, and attitudes—and the amalgamation of all of these keeps us a vigorous, progressive service.

Origins of the Marine

I think we all feel a twinge of regret and experience some confusion at the reasons which are now advanced as the basic causes or motivation for the college demonstrations and conflicts.

I have been an American citizen all my life—and a Marine officer for 34 years. As a citizen, as a serviceman, I believe I have acquired an appreciation of human values.

And so have those young men who have served their country in the Armed Forces. What are their origins? They are the same young men who populate the Army, Navy, Air Force, and Coast Guard. They are the young Americans who have chosen to serve their country, and they come from the same homes, schools, and neighborhoods they have always come from—happy homes, broken homes, farms, houses in the suburbs, ghettos of the inner city, school yards of hot asphalt, and campuses of green lawns and cool ivy. But they all share the quality of individualism; a very rugged and self-sufficient brand of individualism. They will not be intimidated, and when joined together, they are magnificent.

The Tactics of Tyranny

Contrast the conduct of the Marine officer selection teams on those strife-ridden colleges where demonstrations have been effective.

Imagine, if you can, that you are surrounded by a hostile, jeering crowd—a crowd that taunts you for being involved in what they term an immoral war, an unjust war, a war which they claim kills more civilians than enemy.

Imagine, if you can, that you are being cursed and reviled, and that extremely obscene remarks about your country and your Government leaders are being shouted at you.

Imagine, if you can, that you are in imminent danger of being overwhelmed by an unruly mob whose mood grows more belligerent each moment.

Imagine, if you can, the inclination we all have to react, almost automatically, "in kind" when unfairly and unjustly provoked with stinging jibes and personal insults—but, imagine also, the damaging repercussions, the distorted accounts and the "bad publicity" which would more than likely result from such confrontations.

I have been proud of the Marines many times—but I must express my complete admiration for the restraint and the judgment our young Marine captains and noncommissioned officers have displayed in such instances.

When allowed to stay, they have stoically ignored the taunts and the threat of violence.

When asked to leave by college authorities, they have quietly picked up their information brochures and equipment and have walked with dignity to their car.

When they are allowed to interview applicants, they still are subject to some heckling. Few of the questions are from curiosity; most are outright hostile or designed to embarrass the officer.

The author talks to University of Florida students during a visit to his alma mater in 1967. He was then a lieutenant general.

The questions are variations on the old "Have you stopped beating your wife yet?" routine. For example: "Isn't it true that you just follow orders—like Eichman?" No matter how you answer the question, your replies will be criticized.

No matter how reasoned or reasonable your replies may be, it is still a question of "Damned if you do, damned if you don't."

As one midwestern college president declared, the college has an obligation to be concerned about students, to listen to them, and to counsel with them—but they have no obligation to submit to intimidation, violence, or threats by the students, he added.

The Thrust of Unreason

Senator Richard Russell recently commented that such protesters, if they are truly Americans, should reexamine their motives as well as their actions. His very pertinent observation was:

"Let them ask themselves how much they have contributed to our country's welfare; how much they have worked to build this great land of ours."

We have about 75,000 Marines in South Vietnam today who have contributed to our country's welfare. More than 200,000 have already been there and are now back home. Added to those currently there, we now have well over a quarter of a million Marine Vietnam veterans. They have a stake in the future of this country—because they have fought for it.

There is no denying that Americans as a people have a great reservoir of good nature and patience and exhibit great resources of generosity and compassion.

But now we are seeing some of our citizens capitalize on that patience and that generosity to try to change the national character of this country by ignoring laws, by destruction of property, by riots instead of reasoned discussions, and by jeering instead of cheering the very force that guards our rights to enjoy the wonderful heritage of this country—the Armed Forces of the United States of America.

Academic Requirements Relaxed

A great deal has been said about this war and the fact that it is being bought by professionals. This is true, to some degree. Certainly the quality of service by all ranks has been, and continues to be, highly professional. But in truth, only the senior officers and senior noncommissioned officers can be classified as professional, career Marines. And very few of these career men extend their tours of duty in Vietnam. They don't have to. They know they will be back in normal rotation. In fact, a great many of them are now serving a second time, and some have begun their third tours. The greatest majority of Marines who ask to stay in Vietnam an additional 6 months are young privates and corporals who carry ammunition, fire the weapons, and lead the squads; and young lieutenants who lead the platoons and fly our aircraft. These young men are our strength.

Because of continuing on-campus recruitment difficulty, the Marine Corps has opened a program to offer the opportunity of officer candidate school to a number of young men who have completed at least 2 years of college, aiming primarily at those who have completed a junior college program.

Three Marine officers are the targets for dissent. After setting up their recruiting table on a university campus, the following incident occurs adjacent to their booth.

A group of students introduces a new expression of protest in the form of the "Guerrilla Theatre Production." It obviously has been well rehearsed.

The actors, appropriately dressed, begin to work in the "Vietnamese rice paddy." A crowd builds rapidly as the attention of passing students is drawn to the curious scene in progress.

Suddenly the recorded sound of low-flying airplanes pierces the air. As the roar of motors increases, the "peasants" look skyward in mock fear. One actor races through their midst carrying a model plane, as propaganda slogans blare out from the recorder. Now, nine or 10 "marines" enter and begin an attack. There is shooting and bayonetting of the "innocent farmers," who run wildly in all directions. As taped battle sounds add realism, the peasants are "felled" by a barrage of water-filled balloons. Water pistols (filled with a mixture of red ink and water) are added to the raging battle; ketchup flows freely from "wounds" inflicted on the undefended villagers.

The three officer recruiters remain in position as the frenzied actors go out of control. Water balloons burst around the recruiting table, and a water pistol finds its mark. In a state of unrestrained emotion, one of the female protestors hurls herself onto the recruiters' table, saturating it and the literature with ketchup. Finally, the campus police intervene, remove the screaming girl, and arrest one of the balloon throwers. The spectators slowly disperse. The Marine officers replace the defaced literature and resume their mission of recruiting.—*From "Protest and Procurement" by Maj. Gaetano Marino. Reprinted by permission of the copyright holder, the Marine Corps Association, publishers of the Marine Corps Gazette, professional journal of Marines, copyright January 1969, by the Marine Corps Association.*

This does not mean the standards of junior officer leadership and intelligence have been lowered. It does not mean that the quality of officer training will be affected. It does not mean an end to college graduates continuing to seek service as Marine officers. Like the young Americans who willingly take their places in the ranks as enlisted Marines, these young men continue to offer their education, skills, and leadership.

Because of this situation, a new relationship has developed between young Marine officers and their men. There is a silent equality they both acknowledge. Not a lack of discipline, but a warmth of understanding. An unspoken agreement of service.

The Responsibilities of Citizens

Permit me two very graphic statistics. I believe they are significant, as they represent the individual Marine's attitude as a participating citizen.

First: Of all Marines eligible, 74.5 percent cast their ballots in the last national election. I will not wave the holy flag of comparison to other groups. I merely make the statement that 74.5 percent of those eligible did vote. I think that fact is adequate comment on how highly the individual Marine values his citizenship.

Second: Since June of 1966, when the first Marines into Vietnam became eligible for rotation back to the United States, more than 36,000 of them—officers and enlisted—have requested to serve an additional 6 months beyond their assigned tours in that country, in that war. This is what the young Marine thinks of the American effort in that country.

We have learned the strength which comes from those intangible human values known as discipline, espirit de corps, and high standards of personal conduct.

And we have known pride, too—pride in our country's strength, pride in our nation's aims and objectives—and pride in ourselves and each other for our contributions to this Nation.

Those Who Cherish the Future

I believe that those who have, and will, contribute the most to our country are those who have earned a stake in it through service to our country.

Maybe it is because they have risked their lives in defense of freedom that their contribution means so much to them. Out at the Khe Sanh last year one philosophical Marine posted the following crudely constructed sign just outside his foxhole:

"For those who have fought for it, life has a flavor the protected never know."

To which I would add nothing except a heartfelt—amen. □

GOVERNMENT'S CHALLENGE TO YOUTH

Here is one governmental program that thrives on "changing the way things are."

Subject:	Employment.
Question:	Do you think you'd be interested in the job?
Answers:	"I don't want to work in a dull, routine, inflexible system." "There are no individual chances for promotion." "Me become a paper pusher * * * Never."

THE ABOVE statements were not made by test pilots, foreign correspondents, or hippies.

They are random replies to a Pennsylvania State government recruiting team that recently visited three college campuses.

Though each college had a student enrollment of several hundred, only 30 students showed up for the interviews. "We were curious," said most of them.

Students Shun Government Careers

Not a single student expressed a sincere interest in working for the State though Pennsylvania now has a much-publicized government career trainees program.

"Government is synonymous with bureaucracy," says Patricia Quann, a member of the recruiting team and a government career trainee herself.

Now 26, Miss Quann studied at New Paltz State College and Ohio State University and she has kept her fingers on the college campus pulse.

***By* JOHN HOLLAR**

Program Supervisor, Governor's Cost Reduction Program, Commonwealth of Pennsylvania

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Patricia Quann, a member of the State of Pennsylvania's team seeking to recruit college students to government careers, tells Dennis Corby, a fellow Government Career Trainee in Pennsylvania: "The only way government can reach the student is to change its ways." Miss Quann recently visited three Pennsylvania college campuses where recruiting effort created little or no interest.

"We must find some way to reach the students." Higher pay is not the only answer. Today, government has no status on the campus.

"The glamour is in industry. When industry recruits, prospects are flown to New York and wined and dined.

"When the State recruits, we hand out pamphlets that students don't bother to read."

The few students who are genuinely interested in public service head for the big cities where the excitement is. "Young people are quick to sense excitement or boredom," Miss Quann explains.

"The real high-powered kids are snatched up by industry or private consulting groups. The business administration types want an active kind of job. Dedicated civil service is just another way of saying you're stuck in the establishment.

"The intellectuals shun government jobs because they feel they can't make the changes that should be made in government."

Miss Quann points out that job security is not a factor. "That's 1930 philosophy. Today, a college degree is security enough."

Government Must Change

"The only way government can reach the student is to change its ways," Miss Quann says.

"Government must be realistic. It must recognize that the average political science student has no intention of working for the government unless there is a chance for change."

Based on Miss Quann's student interviews, this is what government must do to attract fresh, young talent.

- Brighten up dull brochures that smack of propaganda.
- Eliminate the present methods of testing which are often irrelevant or too narrowly classified.
- Send top-management-level people out to recruit, give exciting talks at schools.
- Show college prospects that management training and supervisory jobs are open to them.
- Coordinate government, business, and universities. Switch top employees, instructors, and students in and out of these areas.
- Convince young people that changes in government are possible, if not probable.
- Offer better salaries and promotion incentives to combat the feeling that a government job is like "doing time."
- Give government career trainees a chance to see from the inside all departments and many different kinds of jobs.

Cost Reduction Offers Challenge

Like most States, Pennsylvania is guilty of many of the above complaints. However, there is one area that could set a new trend and perhaps trigger the inspiration for which young people are clamoring.

The area is Gov. Raymond P. Shafer's cost reduction program.

Of course, the foremost objective in any suggestion system is to save money and improve services. But there is a very significant byproduct in the training of young people.

In this exciting area of management improvement, a distinct break has occurred between government and industry. Traditionally, employee suggestion systems were a personnel department function, more involved with morale than dollars.

The system was a safety valve for the harassed employee to let off steam, or register a gripe. Some good has come from the plant safety type of suggestion, but for the most important part the system was just another "make-them-happy" scheme.

But in recent years, we have learned that a cost reduction program in addition to saving dollars creates deep-seated and lasting impressions of the value of things whether they be purchases, services, systems, or methods.

The Pennsylvania cost reduction program was originally launched as an employee suggestions system in the Department of Property and Supplies. Along with suggestions on how to save money in the purchase of American flags for State buildings, or buying dresses for mental institution inmates, we received ideas in previously ignored areas such as raising strawberries on State hospital farms, and tracking mud and dirt into public buildings.

In short, the cost reduction program implanted among State employees—especially trainees—the seeds of progressive evaluation.

Trainees Become Involved

The important consideration of getting young people involved deals more specifically with the organization of the cost reduction program itself and in everyday administration tasks. Since most programs operate similarly, a perfect opportunity exists to bring young trainees into the organization for a short period of time with the following objectives:

1. To give each trainee an overall view of how the program works.
2. To introduce the trainee to evaluation techniques, such as value engineering, which sharpen skills towards cost visibility.
3. To guide the trainee in the importance of selling the program, contributing his ideas to promotion; and other campaigns.
4. To assign to the trainee a complete project, as a result of a suggestion, so that he may carry it through the various phases to implementation.
5. To allow the trainee full authority in this project so that he will be able to make a positive contribution early in his career.

These objectives allow for the steady flow of new ideas into the program. So often young people are not

Governor Shafer, who initiated the cost reduction program in 1967, talks with the first two government career trainees to participate in the program: Sara Stanton and James Weaver. Author John Hollar tells of their innovations, infra.

given enough responsibility during their training programs or initial duties. They lose interest and see no challenge. By introducing the techniques of cost reduction and management improvement and allowing the trainees to "run with the ball" the following results can be expected:

1. The trainee, at last, receives a project over which he has complete control. The project, of course, must be carefully selected by the program personnel to insure that there is a good chance that it can be implemented and that it will not require excessive information gathering or other complexities.
2. The trainee may very well save the costs of his salary for his period of training. Many trainees have saved the equivalent of a year's salary.
3. The trainee returns to his working unit a "new man". He has attained his goal, has received high level recognition for his efforts and will continue to recognize cost saving areas throughout his career.
4. The cost reduction program has planted the seed of constructive discontent into the mind of a future administrator.

To graphically illustrate these points, here are two case histories of government career trainees exposed to the cost reduction program and a course in value engineering.

Case Study No. 1

Mr. James A. Weaver, 23, government career trainee, serving his apprenticeship in State government with the Commonwealth of Pennsylvania, Department of Labor and Industry, was selected to attend the 4-week training course in the cost reduction program.

Mr. Weaver said later: "By actively participating in the cost reduction program, I was amazed at the opportunity to view the overall operations of State government." He made this comment in a report to his agency head after 2 weeks in the program.

"In addition to my project and the visitation program (door-to-door selling of the cost reduction program), I assisted in the design and preparation of promotional posters, participated in two top level 'blast and refine' sessions, and appeared with Governor Shafer. I observed cost reduction operating and wrote critiques describing and evaluating techniques and procedures."

Mr. Weaver's project was submitted by a Commonwealth employee. It concerned the methods used in testing electronic data processing printouts prior to the actual run. The original suggestion implied that when testing, single-sheet computer printout paper could be used on both sides. Mr. Weaver discovered that this was true in some cases, but that it didn't always apply. During his investigation, he discovered that the State's practice of purchasing all types of computer printout paper did not reflect the most economical methods. He uncovered computer forms applications, suggested guidelines that would be more economical in creating medium quantities of printouts, and established a uniform application for the most widely popular single-ply paper.

He even established savings in making memo pads from discarded tab runs. His total savings for the 4-weeks study amounted to $4,942. Weaver's project was verified by Commonwealth fiscal officials and he was presented a "Certificate of Merit" from the Governor.

"My training in cost reduction," Mr. Weaver said, "has been a very rewarding experience from a motivation and education standpoint. Since the concepts of value analysis need not be peculiar to cost reduction, its application to other phases of governmental operations could prove to be a stimulating and challenging endeavor." This sentence concluded Weaver's final report. At the completion of his training, Mr. Weaver will be promoted to Personnel Analyst I.

Case Study No. 2

Miss Sarah E. Stanton, 22, University of Rochester graduate, and a government career trainee with the State Department of Revenue wrote in her final report, "The training which I have received in the cost reduction program has given me a much needed understanding about analysis practices. As a trainee in management analytical work, I was never before given the opportunity to fully evaluate and recommend a solution to a project."

Miss Stanton's project was submitted by an employee who recommended a method of more fully utilizing typewriter erasers. The basic function of the typewriter eraser is to remove print. The secondary function included: (*a*) maintain paper; (*b*) unite parts—in the rivet brush type; (*c*) remove shavings—pencil brush type; and (*d*) provide protection— the paint.

Miss Stanton gathered facts about each function. Alternate items to perform the same function were analyzed. As a result of a survey, it was discovered that all of the erasure types included the brush. Further, it was discovered that the most popular method of removing the dirt after an erasure was for the secretary to simply blow it off. Yet, the brush accounted for 20 percent of the cost for the erasure. Total savings by using the pencil-type brushless eraser (even after absorbing the costs of discontinuing the other types) amounted to $2,100.

During her training period, Miss Stanton submitted five cost reduction ideas whose potential savings could go as high as $485,000. All of these ideas concerned subjects outside Miss Stanton's working area, and exemplified her highly developed techniques of observation.

Foster Change

These two case studies show how young administrators react when challenged.

Successful encounters like these reinforce experience and influence careers.

We are confronted with young adults, unlimited energy, fresh thinking, viewpoints, and ideas and a great deal of motivation all geared toward change.

However, the seemingly inflexible framework of our present institutions appears to be threatened by these vigorous minds. Young people must be shown that their views, suggestions, and recommendations can penetrate bureaucracy.

Young people today need more than just a challenge. They need a climate conducive to constructive change—a climate that invites betterment. The "establishment" can foster that kind of climate by nurturing management systems that encourage dynamic ideas. □

ABOUT THE AUTHOR

John S. Hollor, Jr. received his BS in Economics from Lehigh University and has done Masters work at the University of Pennsylvania. He has worked actively in the field of public communications, including the position of Staff Director of WSAV-TV, Savannah, Ga. Hollor was appointed Management Analyst for the Department of Health, and later transferred to the Governor's Office as a Records and Forms Analyst of the Commonwealth of Pennsylvania. In 1968 he was named Program Supervisor of the Governor's Cost Reduction Program.

The Dynamics of "Involvement" and "Channeled Conflict"

A PARTICIPATIVE APPROACH TO MANAGEMENT

THE SECRETARY of Defense is assisted in his overall management tasks by the Assistant Secretary of Defense for Administration, the position to which I was recently appointed. In this capacity, I function as his principal assistant and advisor for administration, management, and organization. The functions of my office and staff center on the conduct of research designed to provide effective and timely solutions to Department of Defense managerial and organizational problems.

Since the changing of the guard at the seat of government in January of this year, many Pentagon watchers have been speculating on what significant changes will emerge in the management of our National Defense establishment. And well they might! For changes in the National Administration that occur every 4 or 8 years should bring new executives into all of the Federal departments with new points of view, new approaches to problem solution and new styles of administration and management.

No Preconceptions

I should state at the outset that, as with many of my colleagues entering government service for the first time, I have no preconceived notions of what we are going to change in the Department of Defense. Speaking for myself, these first months have been a period of intensive study. Not only of the problems that daily require analysis and decision, but of the organizational

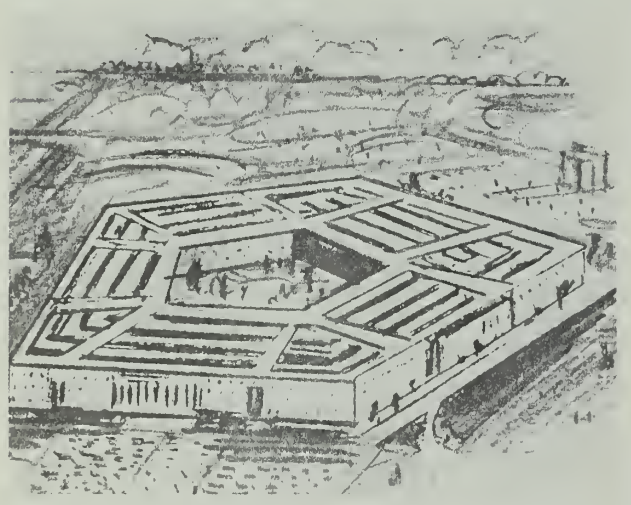
By **ROBERT F. FROEHLKE**
Assistant Secretary of Defense for Administration

functions that should expedite problem solving. Most important of all, it has been a period of increasing awareness of the capabilities of the Department executives who represent the management continuity and provide the machinery of policy implementation.

We have not been exclusively involved in a static assessment of the existing structure. The enormous size of the Department and the heavy responsibilities resting upon the Secretary of Defense demand that the organization remain flexible; that procedures be periodically reviewed so that the Defense components remain responsive to top leadership in this era of seemingly endless crises. I am fully aware that improvement of management has been a prime concern of the Department of Defense for many years. Many of the management techniques used by the Department of Defense have been borrowed from the business community. Some now employed in the civilian sector were developed originally in the Department of Defense.

The People Element

Management reappraisals do not occur only with a change in the party in power. They take place routinely because of the reassignment of military and civilian supervisory and executive personnel within the Department of Defense and its components. Military personnel are rotated every 3 or 4 years, and civilian personnel frequently move from one position to another as their careers develop and they assume new responsibilities. The constant changing of managerial leadership is sometimes regarded as wasteful and debilitating. Each such occasion, however, provides an opportunity for administrative and managerial reviews by people of fresh outlook, and varied experience and training.



In this article I will not discuss organizational changes or the technical side of the managerial process. An OSD-wide functional review has been completed, and such structural or procedural modifications as may be required will be implemented. A blue ribbon panel of citizens has also been formed. This panel will make broad recommendations as to the mission and organization of the Department of Defense.

I prefer to concentrate on those indispensable elements of successful management in any enterprise—people. People make organizations work productively, not the organizational arrangement.

"Channeled Conflict"

Of course, unwieldy organizations can negate the value of the most capable people. But maximum productivity is related more to techniques that require "participation" in problem solving, than to the organizational flow charts. In a word, successful management demands active "involvement" by more than one manager in a particular problem.

This emphasis on participative management is not new, nor is it a particularly complex instrument. But it is essential that the manager understand what it is *not* and how it can be implemented in a practical sense. It is not, for example, simply a matter of tossing the problem to the next lower management echelon and allowing the incumbents to argue it out. Nor is it a continuous "love-in" where all agree. It involves "channeled conflict" and essentially requires knowledgeable people, who know and respect each other, to enter the arena together, with the senior manager as moderator. There they set forth, in the most compelling fashion, alternative solutions, costs, real times involved and probable effects of options. It is in this crucible of conflicting analyses that the real issues are crystallized and various facets of the problem stripped of their sometimes misleading veneer. For seldom will capable experts approach a problem from precisely the same viewpoint. Thus, the outlines of more attractive solutions may emerge from this conflict of ideas, channeled into constructive give and take.

Afterview

Once a course of action is selected, plans for implementation should be developed, insofar as possible, by those responsible for implementation. Dictated plans seldom receive the enthusiastic embrace of the designated executors. Furthermore, all of the people involved should be encouraged to monitor the implementation process, and to recommend changes where indicated. Finally, when an action is completed, the group should again be pressed into analysis; "What did we set out to do? How did we intend to accomplish it? How did we actually accomplish it? *What did we learn?*"

"Participative" is the most difficult style of management and also the most successful. To obtain a precise

In this give-and-take conference setting, the author (at right) practices his philosophy that "successful management demands active 'involvement' by more than one manager in a particular problem."

definition of a problem and to motivate those people concerned to work together toward the same objective requires patience, finesse and understanding. It forces the orientation of the managers' attitudes toward the two obvious ingredients that "energize" participating management.

The first is mutual trust. Respect for your people's intelligence and integrity is absolutely indispensable. Unless you respect your associate's intelligence and integrity, it is dishonest to pretend you want him to participate in setting your objectives and plans.

The second ingredient is open communications. You cannot expect people to vigorously pursue realistic problem solutions when they are unacquainted with all of the parameters of the problem or its implications for the organization. To belabor an old horse, communication must be multidirectional. The manager who habitually ignores his subordinates or lateral officials is short-changing himself and his organization.

I do not have quick and easy answers for Department of Defense problems, and I doubt that formulae solutions can be found for many of them. I am convinced, however, that there will be far fewer errors in judgment and decisions if key subordinate positions are held by the right men, who are listened to and consulted in day-to-day management.

The Proper Ends

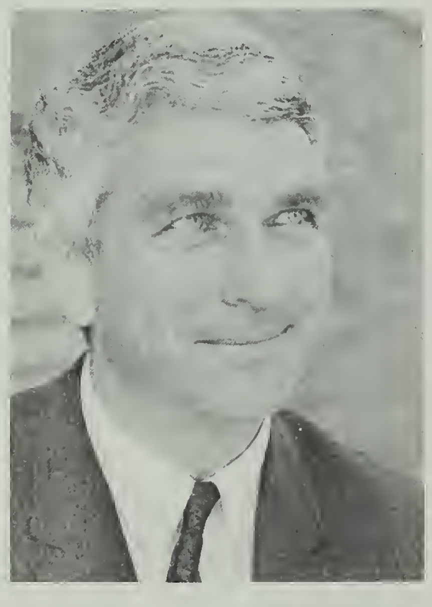
Now a final word concerning our objectives in Defense. I have outlined a philosophy of management, which should be effective. But efficient management is not an admissable end in itself. We in the Department of Defense have a special responsibility to remain aware of the larger goals that underpin this tremendous organization and our place in it. These goals do not change appreciably with the passage of time and should be periodically rearticulated by ourselves, lest they be submerged in the complexities of our daily preoccupation with narrower matters:

- To provide the nation with a Defense Establishment that is preeminent in strength and efficiency.
- To insure that in the aggregate and in its component parts, it remains flexible and responsive as a precise instrument of national policy.
- To demand that this posture be maintained at the absolute minimum expense to the American taxpayer.

These are the ends for which we all must strive. And these are the standards by which our stewardship will be evaluated —— and remembered. ☐

Leaders of the future will need new talents and new styles to manage their free-form, kaleidoscopic organizations

NEW PATTERNS OF LEADERSHIP FOR TOMORROW'S ORGANIZATIONS



By **DR. WARREN G. BENNIS**
Vice President of
State University of New York
at Buffalo

TWO YEARS ago, I forecast that in the next 25 to 50 years we would participate in the end of bureaucracy as we know it and in the rise of new social systems better suited to the 20th century demands of industrialization (*see* Technology Review, Apr., 1966, pp. 36 ff.). This forecast was based on the evolutionary principle that every age develops an organizational form appropriate to its genius and that the prevailing form today—the pyramidal, centralized, functionally specialized, impersonal mechanism known as bureaucracy—is out of joint with contemporary realities.

This breakdown of a venerable form of organization so appropriate to 19th century conditions is caused, I argued, by a number of factors, but chiefly the following four:

1. Rapid and unexpected change.
2. Growth in size where the volume of an organization's traditional product is not enough to sustain growth.
3. Complexity of modern technology, where integration between activities and persons of very diverse, highly specialized competence is required.
4. The psychological threat springing from a change in managerial values toward more humanistic, democratic practices.

Organizations of the future, I predicted, would have some unique charcteristics. The key word will be

"temporary." There will be adaptive, rapidly changing temporary systems. Organization charts will consist of project groups rather than stratified functional groups, which now is the case. Adaptive, problem-solving, temporary systems of diverse specialists, linked together by co-ordinating executives in organic flux—this is the organizational form that will gradually replace bureaucracy.

Ironically, the bold future I was predicting 2 years ago is now a mundane reality; it can be observed today where the most interesting and advanced practices exist. We live in a time and place where rapid social and technological change is endemic, and so perhaps it should not be too surprising that a distant future can invade overnight, so to speak—certainly before the forecast is fully comprehended.

New Styles and Tasks of Leadership

The question of the leadership of these new-style organizations was left unanswered in the original article. Are there any guidelines transferable to their management from present managerial practices? Do the behavioral sciences provide any suggestions for leaders of the future? How can these complex, ever-changing, free-form, kaleidoscopic patterns be co-ordinated? There can be no definitive answers to these questions until the future emerges in a more or less unambiguous way. But we clearly need to attempt an evaluation of the leadership requirements for organizations of the future, for without the effort we shall inevitably back into the future instead of managing it effectively.

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Developing Rewarding Human Systems

The general direction of these organizational changes —toward more service and professional organizations, toward more educated, younger, and mobile employees, toward more diverse, complex, science-based systems, toward a more turbulent and uncertain environment— forces us to consider new styles of leadership. Leading the enterprise of the future will become a significant social process, requiring as much interpersonal competence as substantive competence, if not more.

One convenient focus for a discussion of leadership is to summarize the main problems confronting modern organizations and to understand the kinds of tasks and strategies linked to the solution of these problems. These are summarized in the chart on the next to last page of this article which also shows some possible executive steps.

A simple way to understand the problem of integration is to compute the ratio between what an individual gives and what he receives in his day-to-day transactions. In organizational terms, we can ask: Are the contributions to the organization about equivalent to the inducements received? There is nothing startling or new about this formulation. What is interesting is that organizations frequently do not know what is truly rewarding. This is particularly true in the case of the professionals and highly trained workers who will dominate the organizations of the future, with whom conventional policies and practices regarding incentives—never particularly sensitive—tend to be inappropriate.

Most organizations regard economic rewards as the primary incentive to peak performance. These are not unimportant to the professional, but—provided economic rewards are equitable—other incentives become far more potent. Professionals tend to seek such rewards as full utilization of their talent and training; professional status (not necessarily within the organization, but externally with respect to their profession); and opportunities for development and further learning. The "good place to work" resembles a super-graduate school, alive with dialogue and senior colleagues, where the employee will work not only to satisfy organizational demands but, perhaps primarily, to fulfill self-imposed demands of his profession.

How (or even if) these needs can be deliberately controlled by the leadership is not at all clear. Company-sponsored courses, T-groups, and other socalled adult education courses may contribute. The idea that education has a terminal point is clearly old-fashioned. A "drop-out" may soon be redefined to mean anyone who has not returned to school.

However the problem of professional and personal growth is resolved, it is clear that many of the older forms of incentives will have to be reconstituted. Even more profound will be the blurring of the boundaries between work and play, between affiliative and achievement drives which Nineteenth Century necessities and mores have unsuccessfully attempted to compartmentalize.

Developing Executive Collaboration

It is quaint to think that one man, no matter how omniscient and omnipotent, can comprehend, to say nothing of control, the diversity and complexity of the modern organization. Followers and leaders who think this is possible are entrapped in a false dream, a child's fantasy of absolute power and absolute dependence. As a result, there has been a tendency to move away (tacitly) from a "presidential" form of power to a "cabinet" or team concept. Such a system of an "executive constellation" by no means implies an abdication of responsibility by the chief executive. It is a way of multiplying executive power through a realistic allocation of effort. Despite all the problems inherent in the executive constellation concept—the difficulties of building an effective team, of achieving compatibility, etc.—it is hard to see other valid solutions to the constraints of magnitude and sheer overload of the leader's role.

Not unrelated to the problem of developing an effective executive constellation is another key task of the leader—building a collaborative climate. An effective collaborative climate is easier to experience and harder to achieve than a formal description, but most students of group behavior would agree that it should include the following ingredients: flexible and adaptive structure; utilization of members' talents; clear and agreed-upon goals; norms of openness, trust, and cooperation; interdependence; high intrinsic rewards; and transactional controls—i.e., members of the unit should have a high degree of autonomy and a high degree of participation in making key decisions.

Developing this group "synergy" is difficult. Lack of experience and strong cultural biases against group efforts worsen the problem. Groups, like other highly complicated organisms, need interaction, trust, communication, and commitment, and these ingredients require a period of gestation. But expensive and time-consuming as it is, building synergetic and collaborative cultures will become essential. Modern problems, too complex and diversified for one man or one discipline, require a blending of skills and perspectives, and only effective problem-solving units will be able to master them.

Identification with the Adaptive Process

Man's accommodation to change is generally painful, but characteristically and ironically he continues to seek out new inventions which disorder his serenity and undermine his competence. One striking index of the rapidity of modern change—for me, the most dramatic single index—is the shrinking interval between the time of a discovery and its commercial application. The transistor was discovered in 1948; by 1960 over 50 percent of *all* electronic equipment utilized transistors in place of conventional vacuum tubes.

The increasing tempo of discovery and its application make modern organizations acutely dependent on their success in responding flexibly and appropriately to new information. How can the leadership create an atmosphere of continuity and stability in this environment of change? Whitehead put the problem well when he said, "The art of society consists first in the maintenance of the symbolic code, and secondly, in the fearlessness of revision * * * Those societies which cannot combine reverence to their symbols with freedom of revision must ultimately decay * * *"

There is no easy solution to the tension between stability and change. We are not yet an emotionally adaptive society, though a remarkable aspect of our generation is its commitment to change in thought and action. Executive leadership must take some responsibility in creating a climate that provides the security to identify with the adaptive process without fear of losing status and its psychological companion, a lowered self-esteem. Creating an environment that increases a tolerance for ambiguity and where one can make a virtue out of contingency, in contrast to an environment which induces hesitancy and its reckless counterpart, expedience, is one of the most challenging tasks for the new leadership.

Supra-Organizational Goals and Commitments

The new organizations we speak of, with their bands of "pseudo-species" coping within a turbulent environment, are particularly allergic to problems of identity. Professional and regional orientations lead frequently to fragmentation, inter-group conflicts and power plays and rigid compartmentalization devoid of any unifying sense of purpose or mission.

The university is a wondrous place for the development of advanced battle techniques between groups which far overshadow their business counterparts in subterfuge and sabotage. Quite often a university becomes a loose collection of competing departments, schools, institutes, committees, centers, and programs, largely noncommunicating because of the multiplicity of specialist jargons and interests and held together, as Robert Hutchins once said, chiefly by a central heating system. Having heard variations of this theme over the years, a number of faculty and administrators at one large university, who thought they could "wear the over-all university hat," formed what later came to be known as "the *Hats* group." They came from many departments and hierarchical levels, represented a rough microcosm of the entire university, and have become a prototype through the important role they have played in influencing university policy.

There are a number of functions that leadership can perform in addition to encouraging HATS groups. It can identify and support those individuals who can serve as articulating points between various groups and departments. There are many individuals who have a bi-cultural facility, a capacity for psychological and intellectual affinity with different languages and cultures, who can provide articulation between seemingly inimical interests, who can break down the pseudo-species, transcend vested interests, regional ties and professional biases. Leadership can seek out and encourage these people. It can work at the interfaces of the pseudo-species, setting up new programs in the interstitial areas, in order to create more inter-group articulations. This is precisely what Mary Parker Follett had in mind when she discussed leadership in terms of an ability to bring about a "creative synthesis" between differing codes of conduct. Chester Barnard in his classic *Functions of the Executive* recognized this, and he also recognized the cost in personal energy of this kind of synthesis. He wrote, "It seems to me that the struggle to maintain cooperation among men should as surely destroy some men morally as battle destroys some physically."

Revitalization: Controlling Destiny

The issue of revitalization—the organization's taking conscious responsibility for its own evolution—confronts the leader with the penultimate challenge: growth or decay. His urgent problem is to develop a climate of inquiry and enough psychological and employment security for continual re-assessment and renewal. The organizational culture must encourage individuals to participate in social evolution against unknown, uncertain, and implacable forces and to collect valid data and act on limited information without fear of losing control.

The three-step "action-research" model of data-generation, feedback, and action-planning sounds deceptively simple. In fact, it is difficult. Quite often the important data cannot be collected by the leader. Even when the data are known, there are many organizational short circuits and "dithering devices" which distort and prevent the data from reaching the right places at the right time. And even when data-generation and feedback are satisfactorily completed, organizational inhibitions may not lead to implementation. But some progressive organizations are setting up organizational development departments that attempt to reduce the "implementation gap" between information, new ideas and action. These departments become the center for the entire strategic side of the organization, including not only long-run planning but plans for gaining participation and commitment to the plans. This last step is the most crucial for the guarantee of successful implementation.

New Concepts for Leadership

In addition to substantive competence and comprehension of both social and technical systems, the new leader will have to possess interpersonal skills, not the least of which is the ability to defer his own immediate desires and gratifications in order to cultivate the talents of others. Just as salesmen are admonished that "you gotta know the territory," so too the manager must be at home in the "social territory," the complex and dynamic interaction of individuals, roles, groups, and organizational and cultural systems.

Leadership is as much craft as science. Analytical methods, drawn primarily from social psychology and sociology, suffice for business leaders to understand the scientific aspects of their profession, but the main instrument or "tool" for the leader-as-a-craftsman is *himself* and how creatively he can use his own personality. Leaders, like physicians, are "iatrogenic"—that is, capable of spreading as well as curing disease.

Main Tasks and Strategies of Leadership in Contemporary Organizations

Problem	Tasks of the leader	Problem	Tasks of the leader
Integration The problem of integrating individual needs and organizational goals.	Developing rewarding human systems.	Adaptation The problem of responding to a turbulent, uncertain environment.	Identification with the adaptive process.
Social Influence The problem of distributing power.	Developing executive constellations.	Identity The problem of clarity, commitment, and consensus to organizational goals.	Developing supra-organizational goals.
Collaboration The problem of producing mechanisms for the control of conflict.	Building a collaborative. climate.	Revitalization The problem of growth and decay.	Organizational "self-renewal."

Modern organizations are confronted with a series of circumstances and problems which have no true counterparts in corporate history, and these needs require new strategies and impose new tasks upon modern corporate leadership. The chart attempts to list the new problems, and their consequences, in grossly oversimplified form.

Unless the leader understands his actions and their effects on otheres, he may be a "carrier" rather than a solver of problems. Thus he must be willing and able to set up reliable mechanisms of feedback so that he can conceptualize the "social territory" of which he is an important part—and at the same time realize how he influences it.

Another aspect of the "social territory" that has key significance for leadership is the idea of *system.* At least two decades of research have been making this point unsuccessfully. Research has shown that productivity can be modified by group norms, that training effects deteriorate if the training is not compatible with the goals of the social system, that group cohesiveness is a powerful motivator, that inter-group conflict is a major problem facing organizations, that individuals take many of their cues and derive a good deal of their satisfaction from their primary work group, that identification with the small work group turns out to be the only stable predictor of productivity, and so on.

This evidence is often cited and rarely acted upon. It seems that individuals, living amidst complex and subtle organizational conditions, tend to oversimplify and distort complex realities so that "people" rather than conditions embody the problem. This tendency toward personalization can be observed in many situations. We can see it in distorted polarizations such as the "good guy" leader and his "hatchet man" assistant. It is easier to blame heroes and villains than the system. For if the problems are embroidered into the fabric of the system, complex as it is, the system can be changed. But it is hard to change people.

"Other-Directed" Leadership

One famous typology in the social sciences was introduced by David Riesman in his book, *The Lonely Crowd.* He asserted that contemporary man is more "other-directed" than his father—or certainly than his grandfather, who would have been characterized as "inner-directed." These character types refer essentially to the ways individuals are influenced and the forces which shape their perspectives. "Other-directed" man takes his cues from his peer group rather than from his parents; in other words, he takes his relationships more seriously than he does his relatives. His ideology, values, and norms are transmitted to him and accepted by the particular social group with which he associates. He is a "pleaser," co-operative and accommodating. "Inner-directed" man, to extend an exaggeration, responds to some internal gyroscope, typically internalized paternal pressures. He responds not to any social grouping but to some inner cues, shadowed reflections of his parents' dictates. "Inner-directed" man is rigid, unyielding, and acts on principles. Studies conducted in industrial settings have consistently shown that organizations tend to reward the aggressive, forceful, decisive "inner-directed" leader rather than the co-operative, adaptable, "other-directed" leader. Now a new study of the leadership in service-oriented organizations by E. E. Lawlor and L. W. Porter shows that "other-directed" leaders tend to be more highly rewarded in this setting than "inner-directed" leaders. In the service-oriented growth industries of education, health, welfare, government, and professional organizations, the prime requisites of a leader are interpersonal competence and "other-directedness."

An Agricultural Model of Leadership

I have not found the right word or phrase that accurately portrays the concept of future leadership I have in mind. The most appropriate metaphor I have found to characterize adaptive leadership is an "agricultural" model: The leader's job is to build a climate where growth and development are culturally induced, conditions where people and ideas and resources can be seeded, cultivated, and integrated to optimum effectiveness and growth. Roy Ash, an astute industrialist who is Chairman of Litton Industries, remarked recently: "If the larger corporations, classically viewed as efficient machines rather than hothouses for fomenting innovation, can become both of these at once, industrial competition will have taken on new dimensions." I think Ash captures exactly the shift in metaphor I am getting at, from a mechanical model to an organic one.

Up until very recent times, the metaphor most commonly used to describe power and leadership in organizations derived from Helmholtz's laws of mechanics, and the language reflects this derivation: social engineering, equilibrium, friction, and resistance are typical of the words we use.

The vocabulary for adaptive organizations requires an organic metaphor, a description of *process*—not of structural arrangements. This description must include such terms as open, dynamic systems, developmental, organic, and adaptive.

The key aspect of the process insofar as leadership is concerned is the ability of the leader to develop a collaborative relationship with his subordinates. This is not to say that the leader should be a "good guy" or seek popularity, but it does mean that he will have to learn to negotiate and collaborate with his associates. Because the leader cannot know everything, his subordinates will have the information and competencies that the leader needs; his access to this information will depend entirely on his ability to collaborate with his employees and colleagues. While Marx argued that power accrues to the man with property, we argue that power accrues to the man who can gather and control information wisely. The psychological "contract," if we may use that term, between leader and led is more satisfying and almost always more productive if the relationship is based on collaboration. Studies of scientists and engineers, for example, show that no unilateral conditions, where scientists decide for themselves or where the director decides for them, ever matched the quality of work under a collaborative relationship where research and development decisions were reached through a collaborative process.

Toward a New Leadership Style

All of these strategic and practical considerations lead to a totally new concept of leadership, the pivotal aspect of which is that the leader depends less on substantive knowledge about a particular topic than on the understanding and possession of skills summarized under the agricultural model.

The role of the leader has become infinitely more complex, for he is now at the center of a highly variegated set of pressures and roles. He presides over a complex establishment; his job is to coordinate, transact, motivate, and integrate. Simply, he must have the knowledge and competence to produce environments where the most able people can realize their talents, coordinate their efforts, remain committed to organizational goals, and integrate their efforts in a manner that no one of them working alone could surpass. Perhaps the most difficult aspect of this style of leadership is to transact (and confront) those recalcitrant parts of the system that are retarded, stunted, or afraid to grow. This will require enormous energy, saintly patience, and a sophisticated optimism in growth (or a high tolerance for disenchantment).

This new concept of leadership embraces five important sets of competencies:

1. Knowledge of large, complex systems, their dynamics and their "tribal customs."
2. Practical theories of intervening and guiding these systems, theories that encompass methods for seeding, nurturing, and integrating individuals and groups.
3. Interpersonal competence. This includes at least three components: (*a*) the sensitivity to understand the effects of one's own behavior on others and how one's own personality shapes his particular leadership style and value system; (*b*) a capacity to develop adequate methods for valid feedback; and (*c*) managing conflict. (There was a time when I believed that consensus was a valid operating procedure. I no longer think this is realistic given the scale and diversity of organizations. In fact, I've come to think that the quest for consensus, except in pre-literate face-to-face cultures where it may be feasible, is a misplaced nostalgia for a folk-society as chimerical, incidentally, as the American adolescent search for "identity.")
4. A set of values and competencies which enables one to know when to confront and attack, if necessary, and when to support and provide the psychological safety so necessary for growth.
5. An ability to develop and use all types of information systems, including high-speed electronic computers. The job of the leader will be to collect, organize, and transmit information.

The role of leadership described here is clearly more demanding and formidable than any historical precedent, including both king and pope. Let us hope that this new role of leadership is not only more potent but also more gratifying. ☐

Foreword

Civil defense is the youngest of the defense arms. The program started in 1951, not 1776, and the national civil defense agency has been located in the Department of Defense only since 1961.

The civil defense program is the only defense program which does not rely fully upon DoD resources. Rather, the nature of the program is such that State and local governments must contribute effort as well as funds, and the public must also be involved. The civil defense program includes providing Federal matching funds and other grants to State and local governments.

The Office of Civil Defense needed a system to provide both management information, as a basis for the best application of meager resources, and management tools for all levels. This system had to be computerized so that it would be uniform, objective, simple, fair, and do-able without a large manpower drain.

The approach of this management system, and its success, is covered in this article. The system has contributed immensely not only to sound management of the program, but to erasing the tinhat-and-armband image of civil defense and substituting one of competence and professionalism.

John E Davis

Director of Civil Defense.

THE CIVIL DEFENSE PROGRAM

A Case Study in Federal-State-Local Program Management

THE CIVIL defense program is in many ways unique in the Department of Defense. On the one hand, civil defense is counted as an important aspect of the strategic defensive posture of the country. Should deterrence fail, fallout shelter-based civil defense could save more lives at less cost than any other defensive system, and the program is supported both by the Joint Chiefs of Staff[1] and civilian executives of the Department of Defense.[2]

On the other hand, civil defense consists, in essence, of readiness to save lives and preserve property where the people and property are—namely, in communities throughout the United States. Further, the Federal Civil Defense Act of 1950, as amended, makes civil defense the joint responsibility of the Federal Government and of the States and their political subdivisions. The Office of Civil Defense—a civilian agency reporting to the Secretary of the Army—therefore provides not command but rather (1) leadership and guidance for State and local governments: (2) matching funds for salary and other expenses of eligible governments; and (3) certain key, fully funded programs or systems, such as the National Fallout Shelter Survey, the National Warning System, and an array of training programs.

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[1] General Wheeler, Chairman of the Joint Chiefs of Staff, made the following points in response to questions posed in April, 1968 by the Preparedness Investigating Subcommittee of the Senate Committee on Armed Services: "Passive defense measures are an important adjunct to strategic defensive systems. Civil defense, especially a nationwide fallout shelter system, would certainly reduce the population fatalities produced by a realistic nuclear attack. * * * The Joint Chiefs of Staff have recommended the fund of the current civil defense program at an annual rate of $150–$200 million, pending a decision to expand the program, leading to sufficient fallout shelter for the total population. * * * The total civil defense program for fiscal year 1969 is about half the lower level recommended by the Joint Chiefs of Staff."

[2] Secretary of the Army Stanley Resor said in a statement filed in February 1969 with the House Committee on Appropriations Subcommittee considering the OCD budget request: " * * * an effective civil defense program is an essential and prudent element in our defense planning. It would make a major contribution to the protection of the population in the event of a large-scale nuclear attack."

It is for these reasons that the civil defense program is unique. It is a DoD program important to the defensive posture of the country, yet it is one where—due to the joint responsibility laid down by law—local and State governments must decide to act, and must appropriate funds, before Federal assistance can be effective. The program, in other words, is an undertaking in cooperative federalism. There are several hundred Federal-State-local grant in aid programs in non-Defense agencies, but none in DoD except the civil defense program.

Program Content

What is civil defense, and how do we go about getting it? Fallout protection is the foundation upon which the civil defense system is built—because any part of the United States, as a result of nuclear attack, could receive fallout in amounts that would be lethal to unprotected people.

In the 1950's, the question was how fallout shelters could be constructed. It became clear, however, that the wrong question was being asked, since a great shelter resource exists in buildings large and small that are of reasonably substantial construction. The problem was primarily one of finding this existing protection.

Accordingly, the National Fallout Shelter Survey was launched by OCD in 1962, and it has been followed by surveys of the protection inherent in home basements. The Army Corps of Engineers and the Naval Facilities Engineering Command have conducted the surveys of larger structures for OCD, and the Bureau of the Census has conducted the home fallout protection survey. The results of these surveys are impressive.

As as June 1969, shelter for 188 million people had been located in over 195,000 larger structures, at an average cost of 64 cents per space located. Half of these facilities are stocked with austere survival supplies, and 55 percent are marked with the yellow-and-black fallout shelter sign.

The survey of fallout protection in homes has so far been conducted in 26 States plus the District of Columbia. It has located fallout-protected basement space in 8.6 million homes, in which some 30 million people live, at a cost of 92 cents per home surveyed. The survey was based on computer processing of data provided by householders, on the dimensions and construction of their homes, and experts in direct-mail surveys say it is remarkable that three-quarters of the people who received a mailed questionnaire took the time to fill it out and return it to Census.

The surveys of existing fallout protection, therefore, have at very low cost identified a great deal of shelter—with not 1 dollar spent on construction of new shelter. There is still, to be sure, a substantial way to go before a shelter space will exist for each citizen in or near his home, school, or place of work. This is because the bulk of the space located in larger buildings is in the central parts of cities, much of it not readily accessible to people in residential areas.

But the shelter surveys are continuing, and OCD is encouraging the incorporation of fallout protection in new buildings, at low cost or none, by the use of new design techniques. With a large, even though not complete, shelter base identified, increased emphasis in the civil defense program has been given to making the best use of available shelter in case of nuclear attack.

Payoff of Shelter-Based CD System

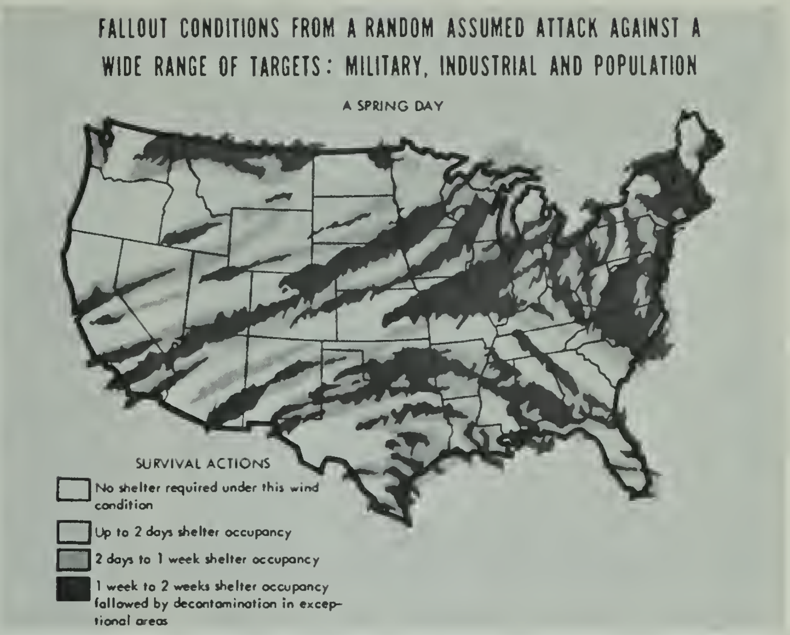
The lifesaving potential of the existing shelter inventory is substantial: DoD studies indicate that in a large attack against cities and military targets, with the weight of attack directed against cities, the fallout protection identified today would save up to 15 million people who would otherwise die of radiation effects. The approved program continued to 1975 would save up to 30 million people under heavy attacks then possible.

The key words are "up to," because these estimates of lifesaving potential are based on the assumption that available fallout protection is used effectively. In principle, the problem is simple. For existing shelter to be used with maximum effectiveness, these things must occur:

- Each citizen must know where he should go and what he should do in case of attack, and he must act on this knowledge. In brief, he must go quickly to the best fallout protection available, and stay there until the decay of fallout radiation makes it safe to leave shelter. (This could be a few days, a week, or up to 2 weeks.)
- Local governments must be prepared to conduct emergency operations. This means combatting successive threats to the lives of their citizens by such actions as warning the population and providing emergency information; having the police force aid them to move rapidly to shelters; providing for fire prevention and control both by citizen effort and fire department operations; providing fallout information based on radiological monitoring and analysis; providing management in public fallout shelters in larger buildings; and providing post-shelter medical, public health, and welfare support.

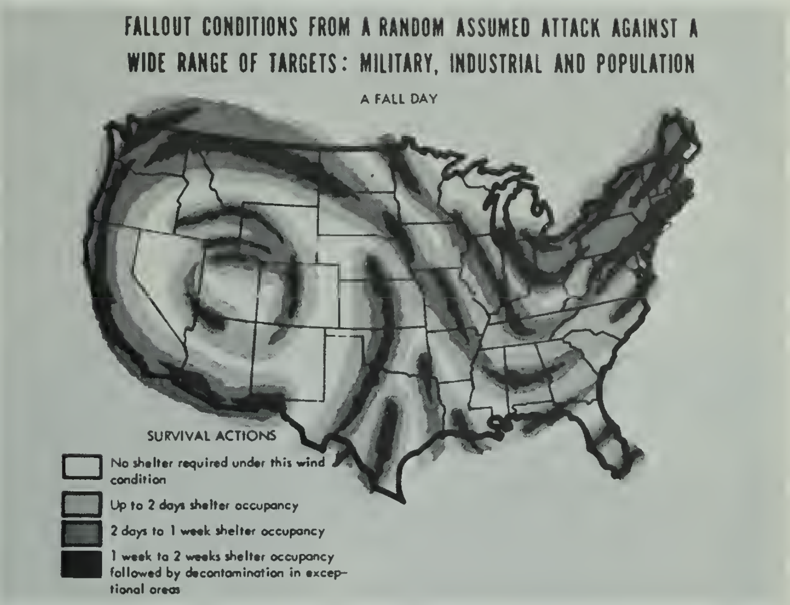
Nature of Work Required

In short, what is needed is not fallout shelter alone, but rather shelter plus the supporting systems that will ensure maximum performance by the shelter-based civil defense system. Building this emergency readiness plainly requires a considerable amount of work, and the work must be done "on the ground," where the people


FALLOUT CONDITIONS FROM A RANDOM ASSUMED ATTACK AGAINST A WIDE RANGE OF TARGETS: MILITARY, INDUSTRIAL AND POPULATION

A SPRING DAY

SURVIVAL ACTIONS
☐ No shelter required under this wind condition
☐ Up to 2 days shelter occupancy
▨ 2 days to 1 week shelter occupancy
■ 1 week to 2 weeks shelter occupancy followed by decontamination in exceptional areas


FALLOUT CONDITIONS FROM A RANDOM ASSUMED ATTACK AGAINST A WIDE RANGE OF TARGETS: MILITARY, INDUSTRIAL AND POPULATION

A FALL DAY

SURVIVAL ACTIONS
☐ No shelter required under this wind condition
☐ Up to 2 days shelter occupancy
▨ 2 days to 1 week shelter occupancy
■ 1 week to 2 weeks shelter occupancy followed by decontamination in exceptional areas

No area of the United States is safe from fallout. The two maps above show the geographic distribution of various levels of radioactivity resulting from an assumed attack: the top map for a spring day; the bottom, for a fall day. The actual area that would be affected in a nuclear attack would depend on the season, wind conditions, and other variables.

are, in localities throughout the country. The emphasis throughout is on *maximum use of existing assets*: existing fallout protection; the police, fire, and other forces of civil government, with their know-how, communications, and equipment; and key nongovernmental groups or facilities such as physicians, nurses, hospitals, news media, and private construction contractors.

Thus, local shelter-use plans must be developed by matching people to the best fallout-protected space locally available, in public shelters or in their homes, with the resulting maps and instructions distributed to all citizens. Public shelters in larger buildings must be marked with fallout shelter signs, and stocked with OCD survival supplies. A local emergency plan must be prepared, specifying which government forces are responsible to do what during a civil defense emergency, as well as the roles of nongovernmental groups with essential missions. A protected control center (emergency operating center, or EOC) must be prepared from which key local officials can direct operations. Radiological monitors, shelter managers, and other specialists must be trained.

CD Program Management

It is clear that while civil defense readiness is an aspect of the national strategic defense posture, one cannot procure this readiness by the methods that are used to train and field a battery of artillery or to put a destroyer into commission. What methods does OCD use to develop civil defense readiness on a nationwide basis?

OCD—under the law—does not stand in a command or directive relationship to either State or local governments. It can (and does) lead, exhort, advise, and assist, but there is no penalty for failure to prepare. And the first dollar for local programs must be appropriated from local revenues—OCD cannot provide matching funds until there are funds to be matched.

The device OCD uses to guide and manage the program is the "Local Civil Defense Program Paper and Progress Report"—the primary requirement for OCD assistance to a local jurisdiction. The program paper specifies in detail the work to be done in some 75 areas—such as stocking public shelters, extending local warning coverage, training radiological monitors, and preparing local emergency plans. For each item, the locality states what its total requirement is (e.g., stock 21,000 spaces identified by the shelter survey); what has been accomplished to the start of the fiscal year; what remains to be done; and how much effort is planned for the current year. A semiannual report of progress as of December 31 is also required, while the program paper for the next fiscal year includes a report of progress in January through June.

The program paper/progress report forms are computer-prepared, with a new form being sent twice a year to each participant, reflecting the last progress data it has submitted. The primary purpose of this "turnaround" computer processing is to reduce the clerical work load for local jurisdictions, but it also allows OCD to prepare State, regional, and national summaries of the local data, and to produce other management reports (discussed below).

Despite the use of program paper data as the base for a management information system, the document's primary, indeed overriding, purpose is *local* program management. By outlining the work needed in a number of specific fields, it serves as a checklist for the local program manager, normally the civil defense director, and guides him in scheduling work. As a basis for scheduling local effort, OCD publishes a "program emphasis" document annually, with shelter-related work and emergency planning being in priority, 1, direction and control and radiological defense in priority 2, and so on.

The program paper does not reflect work by the local civil defense agency alone such as stocking fallout shelters or training shelter managers. Rather, it reflects work scheduled or completed by all departments of local government with emergency missions—for example, auxiliary police training and police emergency planning by the police department or sheriff's office, or fire defense planning by the fire department. The program paper is signed by the mayor, city manager, or other chief executive, as well as the civil defense director.

Thus the program paper embodies the basic concept that local civil defense is the same thing as local government operating in an extraordinary emergency. Civil defense is *not* a special unit or group of of people, standing by to save the day in case of a major disaster.

The extent of participation in the program—which OCD can urge but not compel—is high (and perhaps surprising, in view of the preoccupation of local officials with school, urban renewal, crime, and related problems). In fiscal year 1969, nearly 4,400 local governments, including almost 90 percent of the national population, submitted program papers. These provide a basis for State and OCD regional assistance to localities, in such areas as training support, community shelter planning assistance, and support of local shelter stocking operations.

The program papers and progress reports also provide a basis for determining local eligibility for matching funds and other Federal assistance. Approval of local programs depends upon work scheduled and accomplished, local funds and manpower available, and other factors relevant. Conditional approvals may be given, accompanied by a letter specifying minimum goals to be met during the ensuing 6 months, if eligibility is to be maintained. Similarly, conditional disapprovals specify areas that require correction if eligibility is to be regained.

OCD's Integrated Management Information System

Since all program paper data is processed by computer, it is relatively easy to generate reports for OCD and State program managers. Summaries are prepared, as well as percentages of accomplishment in a number of specific areas, overall capability indicators, and reports showing trends in program growth.

These reports are produced by OCD's Integrated Management Information System, or IMIS. Some of the IMIS reports are fully deployed, while some are in the final field-test stage. The summaries have been provided to regions and States since fiscal year 1966, when the computer-processed local program paper was introduced. The mid-fiscal year 1969 national summary shows, among other things, that:

- 6,430 man-years of effort, by both full-time and part-time local personnel, were programed.
- Localities with 46 percent of the national population have fully qualified emergency operating centers (control centers), with another 37 percent of the population covered by local EOC's having operational capability but not meeting all criteria ancomended by OCD.
- 111,597 shelter managers have been trained, against a national requirement for 524,299.
- 211,468 auxiliary police have been trained in the reporting jurisdictions, to support 287,022 regular local police (with 40,249 regulars and 23,149 auxiliaries having had radiological monitor training).

The IMIS reports now in final field-test are designed as a kit of tools for use by State and regional managers, to help them to best invest the effort they have available to assist local governments.

The trends in program growth report shows how individual jurisdictions have performed, in terms of work accomplished vs. work scheduled, for the last 4 fiscal years. State, regional, and national trend summaries are also produced. The latest national summary shows, for example, that goals for training citizens in the medical self-help course were met or exceeded in fiscal year's 1966–68, with nearly 4 million persons trained.

Shelter manager training, in contrast, reached only 45 percent of the goals set by localities over the same 3 years. Further, to train the total deficit of fallout shelter managers would take nearly two decades, at the recent rate of some 22,000 persons trained per year. In view of these rather meager results, OCD is developing shelter-management instruction manuals, to be prepositioned in public shelters for use by occupants should no trained manager be present. Abbreviated training courses have also been developed, for use should a period of international crisis occur.

IMIS also produces the capability indicator, a measure of overall readiness analogous to the Army unit readiness condition. This capability indicator is computed for each of the 4,300-plus participating local jurisdictions, and includes both existing and projected capability—the latter being the capability should all work planned for the year be completed. The capability indicator is produced by assigning varying weights for work done on 40 of the most important items on the locality's program paper. (The weights for individual program elements were developed by mathematical modeling, modified by judgments derived from a paired-comparison analysis.)

The report shows the present and projected indicators for the community, and shows how these are derived for each of the program elements analyzed. The average score for all jurisdictions of like size and type in the country is shown, as well as State, regional, and national averages for jurisdictions of all sizes.

The capability indicator is of course not a predictor of the number of lives that would be saved in a given jurisdiction under nuclear attack conditions, because many intangibles would be of critical importance, such as the effectiveness of local executives in emergency leadership. However, the report does show how well the locality is doing in terms of tangible progress, as compared with its peers, and points out the areas in which available effort should produce the best payoff.

IMIS produces additional reports on preprinted forms, such as percentage of progress in specific program elements, and rankings of localities within a State by various indicators. Special reports are produced to meet regional and State management needs in specific areas. The IMIS management reports have been deployed on a field-test basis in over a dozen States, and will be modified to meet needs identified by users.

Future Developments

IMIS, in short, is an evolving and developing management system. As the civil defense program evolves,

Survival supplies furnished by OCD are being stocked in public fallout shelters in existing buildings. In the foreground are radiological monitoring instruments. Above and to the left is the medical kit. To the right are survival rations (canned biscuits), a water drum (filled on site), and the shelter sanitation kit.

the local program paper form is modified accordingly—to date, at 2-year intervals—and the IMIS computer programs and reports are modified as well. There is in addition a very promising new feature in development.

This is a system to provide to each local jurisdiction, on the face of its computer-prepared program paper form, recommendations on how the effort it has available can best be applied—in light of the progress it has made to date. The approach is to start with the gross effort available, reduce this to account for overhead and program-maintenance effort, and recommend how best to apply the net effort remaining.

For example, assume that a jurisdiction has 2.0 man-years of effort available. Surveys have shown that approximately 35 percent of this gross effort is consumed in "reading the mail," attending meetings, preparing budgets, and other work that is not "direct labor"—leaving a balance of 1.3 man-years. Experience further shows that where a substantial amount has been done—shelter spaces stocked, radiological monitors trained, etc.—additional effort is needed to maintain the level attained. Subtracting the maintenance effort needed for inspecting shelter stocks, training replacements, and so forth might show 0.9 or 1.0 man-years to be the net effort available for progress in the hypothetical jurisdiction.

A linear programing approach is applied to generate a recommended distribution of this net available effort—in light of what remains to be done in the jurisdiction, the relative payoff of effort applied in different program areas, and the amount of work needed for specific accomplishments (e.g., for stocking supplies for 50 shelter spaces, training 20 radiological monitors, etc.). The relative payoff of different types of work is determined by applying the weights used to calculate the locality's capability indicator. The resulting "recommended distribution of effort" is printed in a blank column of the program paper, to be used as a general guide in scheduling local work.

The recommended effort thus amounts to program emphasis individually tailored to the situation and capabilities of each jurisdiction. Where, for example, two localities had nearly the same resources to work with, but had made differing amounts of progress—or progress in different areas—the recommended distribution of local effort would be quite different. Also, a number of localities will be identified which have no net effort available for progress—unless local executives and legislators provide more support, they will never improve. Finally, national summaries can be produced showing the total effort needed to attain any given level of preparedness—or conversely, how much progress can be expected, over how long a time, at present levels of effort.

The computer programs for this distribution-of-effort system have been developed, tested, and refined, and the system has been field-tested in 57 jurisdictions in 18 States. The main problem identified was that few localities report their gross available effort accurately enough to provide a valid starting point for the computational processes described above. This problem is being overcome by more thorough review of local data on manpower (which up to now has not been an important item, and hence has not had much followup).

With respect to subjective judgments and resistance, OCD was relieved (and somewhat surprised) to find that these were not significant, at least in the test localities and States. It would not have been surprising to have encountered the reaction among local directors that, "You think you are going to try to use your computer to run *my* program?"

The field-test teams emphasized, however, that the purpose of the proposed system was not to lay down mandatory requirements for local work, but rather to assist local civil defense directors to program their work so as to realize the greatest improvement in capability possible from the effort available to them. Four-fifths of the directors interviewed believed that the system would be helpful to them in planning their activities. and most welcomed the prospect of such assistance.

In view of this strongly favorable response, OCD now envisages deploying the recommended-distribution-of-effort system, on a test basis in those States that desire it, starting in fiscal year 1971. As all of the 18 test States also reacted favorably to the system, the fiscal year 1971 deployment may include most of the country.

System Development and Operation

OCD's Integrated Management Information System, described above, took some 18 months and $500,000 to develop initially. Local program paper "turnaround" forms and IMIS management reports are produced twice a year by the National Civil Defense Computer Facility, using a CDC 3600 computer and appropriate peripheral equipment. Operating IMIS requires some 950 hours of computer time each year, and some four man-years of system designer and programmer effort are needed anually for modifications and improvements.

Summary

The civil defense program represents a venture in cooperative federalism that has few if any parallels within the Department of Defense—though it is similar in many respects to some of the grant-in-aid programs administered by other Federal departments and agencies. The management techniques and system used by OCD apply the current state-of-the-art in automatic data processing, and appear to be in advance of those used in other Federal-State-local programs. The recommended-distribution-of-effort system in particular, if sucessfully deployed, will be a substantial innovation in public administration. ☐

WHY ACCRUAL ACCOUNTING?

Foreword

The accrual basis of accounting can be a valuable tool of management—both in the management of individual programs and organizations, and in the management of the Government's finances as a whole. The President's Commission on Budget Concepts, of which I was the Staff Director, recommended in October 1967 a conversion of statements of budget receipts and expenditures to the accrual basis. The Commission also endorsed the use of cost-type budget statements for the management of individual accounts; such statements are also made possible by accrual accounting. I hope that all officials and employees engaged in the Government will familiarize themselves with the uses to be made of accrual accounting, and will join in the massive conversion efforts now under way at the direction of the President.

Carl W. Tiller, a career employee with 26 years service in the Bureau of the Budget, is spearheading the efforts to implement the accrual accounting recommendations as well as other recommendations of the President's Commission. The Treasury Department's Bureau of Accounts and the General Accounting Office are full partners in this effort. In the following article Mr. Tiller provides an explanation of the background and values of the accrual accounting conversion.

ROBERT P. MAYO,
Director, Bureau of the Budget.

AT THE EXPLICIT request of the President the Federal Government has embarked upon a massive effort to complete the installation of accrual accounting in all departments and agencies. It is unusual for a President of the United States to take the time to concern himself with such a detail as the nature of our accounting system. One may well ask "Why accrual accounting? Why the big push for a change?"

The answer is simple: A modern accounting system which uses accrual techniques is deemed to be essential for improving the management of Government agencies, aiding the President and the Bureau of the Budget in their tasks of central financial management, and facilitating understanding and appropriate action on the relationships between the Government and the nation's economy.

By CARL W. TILLER
Special Adviser on Budgetary Development
U.S. Bureau of the Budget

Historical Background

The effort for accrual accounting in the Government is not new; the current support for it is. A task force of the First Hoover Commission recommended that the accrual basis of accounting be applied to both revenues and expenditures. The Commission endorsed these recommendations.[1]

About the same time, financial experts were criticizing the daily Treasury statement as an unreliable and even misleading report on Government finances, because it was confined to cash transactions.

The Budget and Accounting Procedures Act of 1950 did not mention the words "accrual" or "accrued", but it implied the accrual basis by the use of other terminology which is used by professional accountants in relation to accrual systems.

The Comptroller General of the United States in

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[1] U.S. Commission on Organization of the Executive Branch of the Government, *Report on Budgeting and Accounting*, February 1949, pp. 43–44 (Recommendation No. 12).

1952 issued principles and standards which under the law were to be controlling upon agency accounting systems, stating:

"* * * The accrual basis has long been accepted as the standard in the commercial world and, although much progress has been made in this respect in Federal Government accounting, *further emphasis on accrual accounting is needed* for continued progress in increasing the contribution which accounting can make to financial management * * *

"To summarize, the accrual basis of accounting should be used in each instance to the extent that accounting results will be significantly improved and thereby increase the value of accounting to management and others by (1) contributing to full disclosure, (2) improving financial control over assets and liabilities, (3) aiding in the development of cost accounting, (4) providing more informative budget data, and (5) furnishing more significant accounting data which is related to specific assignments of managerial responsibility."[2]

The Second Hoover Commission recommended the use of accrued expenditures as the measure of appropriation requirements, as well as for use in calculating budget surpluses and deficits.[3] It also recommended the greater use of applied costs, derived from accrual accounting systems, in budget formulation, administration, and review. While the recommendation to change the basis of appropriations fell flat, the message got through that accrual accounting is desirable. In 1956, Public Law No. 863, 84th Congress, provided a mandatory statutory basis for accrual accounting in these words:

"As soon as practicable after the date of enactment of this subsection, *the head of each executive agency shall*, in accordance with principles and standards prescribed by the Comptroller General, *cause the accounts of such agency to be maintained on an accrual basis* to show the resources, liabilities and costs of operations of such agency with a view to facilitating the preparation of *cost-based* budgets as required by section 216 of the Budget and Accounting Act, 1921, as amended. The accounting system required by this subsection shall include adequate monetary property accounting records as an integral part of the system." (31 U.S.C. 66a; 70 Stat. 783) (Emphasis supplied.)

Under this mandate most Government agencies moved during the following decade to adopt recommended systems of integrated accounting including accrual techniques. Notable exceptions, at least so far as public disclosure of results was concerned, were the Department of Defense and Department of State.

The schedules printed in the budget appendixes for every other cabinet department and for 90 percent of the noncabinet agencies were based upon the use of accrual accounting systems in less than 10 years after the law was enacted.

A temporary commission known as the President's Commission on Budget Concepts, and including knowledgeable public-spirited citizens, some Government officials, and some congressional leaders, reviewed the methods of presenting the Government's budget in 1967. The Commission's report, presented on October 10, 1967, included a firm recommendation that the budget surplus or deficit be stated hereafter on the basis of accrued revenues and accrued expenditures instead of the prevailing cash basis, and that monthly reports by the Treasury on the status of Government finances conform to this accrual concept.[4] The Commission also strongly endorsed the use of applied costs to measure program requirements in connection with schedules of appropriation requests in the Budget Appendix.[5]

The Administration then in power set the machinery in motion to achieve such a Government-wide accrual capability at an early date. It was this effort which President Nixon endorsed on February 22, 1969. The Director of the Bureau of the Budget, the Secretary of the Treasury, the Chairman of the Council of Economic Advisers, and the Comptroller General of the United States have joined in the central effort to carry out the Commission's recommendations and the President's wishes.[6]

The Products of Accrual Accounting

Accrual accounting is usually defined as "that system of accounting under which revenues are recorded when earned and expenditures are recorded as soon as they result in liabilities for benefits received." Others say more simply that an accrual system clearly reflects what we own and what we owe at a given point in time, together with the changes therein for an accounting period.

In addition to producing a statement of financial condition ("balance sheet") that shows what we own and what we owe on a specific date, an accrual system has two other products that are of particular concern in Government management:

- Information on accrued revenues and accrued expenditures. A revenue accrues when the Government earns it. An expenditure accrues when a payee earns it from the Government, whether or not it is paid promptly, and even regardless of whether or not it is due as soon as it is earned.

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[2] General Accounting Office: *Accounting Principles*, Memorandum No. 1, Nov. 26, 1952, with an attached *Statement of Accounting Principles and Standards for Guidance of Executive Agencies in the Federal Government*. The quotation is from section A–VI of the attachment.

[3] U.S. Commission on Organization of the Executive Branch of the Government, *Report on Budgeting and Accounting*, June 1955, pp. 22–25 (Recommendation No. 7).

[4] U.S. President's Commission on Budget Concepts, *Report*, October 1967, pp. 7–8 (Recommendation No. 5) and pp. 36–46.

[5] Ibid, p. 66.

[6] See the memorandum addressed by these four officials to the heads of departments and agencies, March 10, 1969, to which a copy of the President's memorandum of February 22, 1969, is attached.

- Information on applied costs. This term covers the value of goods and services consumed or used in carrying on an activity. In the case of services (which of course cannot be stockpiled), applied cost and accrued expenditures are usually identical. In the case of materiel an accrued expenditure occurs when the item goes into inventory (either the Government's or the contractor's holding on our behalf), while the applied cost occurs only when the item is issued from inventory for use in carrying out a program. The difference between accrued expenditures and applied costs is therefore equal to the change in the sum of inventories on hand (including those due-in from suppliers who are manufacturing or fabricating to the Government's specifications, as distinguished from inventories for general sale).

These two types of accrual measures may be contrasted with two other measures which have been in use longer in the Government—cash receipts and expenditures, and obligations incurred. The cash figures which have been the basis for computing budget surpluses and deficits reflect amounts collected and checks issued respectively. Obligations incurred, which are the basis for appropriation controls, cover contracts and purchase orders issued and grant agreements made, whether or not performance takes place or payments are made within the period. They also cover services obtained, as in the case of personal services, utilities, etc., although in such cases obligations and accruals are usually identical.

Of course any suitable accounting system must account for cash received and disbursed. Similarly, because obligations are the basis for congressional financial control over the executive branch, accounting systems must accumulate data on obligations incurred.

Are the advocates of accrual accounting then suggesting that a second or third, duplicative, accounting system be installed? No! The practice followed by the advanced civilian agencies, and the doctrine recommended by the central financial agencies, calls for a single accounting system which records transactions at several points in the timing of each, and thus integrates information on cash, obligations, and accruals. The fundamental idea is to catch up and summarize these various needed measures in a single general ledger at the headuarters level for the accounting entity, and usually in the principal field offices as well, with appropriate subsidiary ledgers to provide necessary detail on the respective measures.

The Usefulness of Accrual Information

Accrued expenditures will reflect in financial terms the extent of contractor and vendor performance during the month or other accounting period. That is, expenditures will represent the amounts he has earned—by physical delivery of the goods in the case of off-the-shelf items, and by accumulating costs on work in process for Government account in the case of work done to our particular specifications. It is these amounts which will go into the monthly Treasury statement and into the compilations, monthly and annual, of budget expenditures and budget surpluses or deficits. It is expected that the data will have several uses:

- For overall economic analysis the accrued expenditures, along with parallel information on taxes and other accrued revenues, will reveal the extent to which the Government is stimulating or slowing down the economy. The accrued expenditures will represent the purchase of goods and services by the Government. It is the purchase, not the cash payment, which relates to the gross national product and which results in income for the other party. The corollary figures, on the portion of inventories (including work in process) held by contractors on behalf of the Government, is also significant to an analysis of Government-industry relationships. Such information would have been invaluable at the time of the Vietnam War build-up. It will be essential during any period of post-Vietnam readjustment.
- For appraising the financial condition of the Federal Government, and the operating results for a month, quarter, or a year, accrued expenditures together with accrued revenues should be much more reliable than cash data. On the accrual basis the surplus or deficit will represent the net increase or decrease in our current financial position. Under the old cash basis a significant increase in bills payable and other liabilities might be hidden from view. Just as an individual's financial position is worsened if the net increase in his bank account of $100 during the year is accompanied by a net increase of $300 in the amounts he owes on his charge plates, so a Government cash surplus of $100 million is misleading, if it is accompanied by an undisclosed increase in liabilities of $300 million. In such an illustrative case the accrual basis will show that we have lost ground by the net amount of $200 million.
- To provide a greater degree of integrity in the Government accounts, the accrual basis is deemed to have advantages. This point is a counterpart of the one made in the preceding paragraph. An agency can appear to save money on its cash expenditures by merely slowing up the payment of bills, but such action is not a genuine saving to the Government. On the other hand, the accrual basis will take account of the unpaid bills and therefore an agency cannot revise its accrued expenditure total by such bookkeeping or procedural devices; to hold down on accrued expenditures it will be necessary for an agency to actually buy less or at any rate receive less from its suppliers and therefore to owe less to the suppliers.

- For contract management purposes, where the contract calls for specific performance as distinguished from purchase of items off the shelf, the accrual basis is superior.

As accrual information is obtained either from a contractor or a Government representative at the contractor's plant, it should represent the cost to the Government of the work done during the month or for the year to date. This will enable contract managers to observe whether the progress is faster or slower than expected, and initiate corrective action with the contractor if that appears to be necessary. The accrual basis when thus applied relates accounting to the procurement and contracting actions, and thus provides a single management tool to keep abreast of contractor performance. On the obligation basis the accounts merely show the orders placed with contractors but reveal nothing of performance. On the cash basis the accounts reflect only the payments to the contractor which may or may not be congruent with performance depending upon his practices and time lags in submitting requests for progress payments and the time lags encountered by the Government in reviewing and approving such requests.

The Usefulness of Applied Cost Data

In the type of accounting system recommended for Government agency use, accrued expenditures usually are accumulated at the appropriation level, but applied costs are recorded at the level of budget activities. Applied costs represent a refinement of accrued expenditures in that they are responsive to changes in inventory levels, and reflect the actual consumption of resources to get a job done.

Applied costs are a useful management tool since they provide the only valid financial figures for comparison with work output. In a hospital, for example, applied costs can be compared with patient days of care, to arrive at cost per patient day. However, if the hospital purchases several car loads of canned food at one point during the year, to be consumed by the patients throughout the year, the financial measures involved could produce a distortion. In the month in which the contract is entered into, the obligations when compared with patient days would be way out of line; in the month which the goods are received, the accrued expenditures per patient day would be way out of line; and in the month in which the check is drawn to pay for the goods the disbursements per patient day would be misleadingly high. The applied cost measure overcomes all of these difficulties and is reliable for comparison with work output.

The applied cost measure is also useful in estimating budget requirements for the year ahead, especially when the estimator seeks to "use a base" as a starting point. Obligations for the base year may include purchase orders to add to inventories, and the unsophisticated use of the old obligation builds into the new appropriation request, unwittingly, a further increase in inventories which may be unnecessary—in fact may be wasteful. The applied cost basis avoids the distortions involved in burying inventory buildups or draw downs in the basis for budgeting.

The Outlook for the Accrual Basis

All agencies have been urged to complete their preparation for accounting and reporting on the accrual basis by June 30, 1969. During the fiscal year that begins July 1, 1969—fiscal year 1970—agencies will test their readiness, and will continue to make (or in some cases, start) monthly reports to the Treasury. The Treasury Department will compile special monthly statements on an accrual basis, not for immediate publication, but for study within the executive branch.

The time table calls for the budget estimates for the year 1972 to be prepared on the accrual basis in the late summer and fall of 1970. As is customary the budget schedules will show a comparison with the last completed fiscal year—in this case with accrual information for the fiscal year 1970 as a whole. Upon publication of the President's budget on accrual terms in January 1971, it is expected that the Treasury financial reports will shift to a monthly accrual basis and then the "historical data" for the months of 1970 will be disclosed for public use.

While it is likely that improvements and refinements in the data can be made during this forthcoming and experimental year, it is hoped that the data will be as good as possible very early in the year, so that it can be used for valid comparisons a year later.

The addition of the accrual basis to the accounts may cost some agencies money. However, the experience of the agencies who are well advanced in these matters, indicates that in many cases, if accruals are appropriately integrated with obligation and cash accounting, the added cost can be held quite low. If the installation of accrual techniques is combined with a systems simplification effort, the resulting integrated accounting system might cost no more at all. Furthermore, although direct reports from contractors and grantees monthly are to be preferred, for contract and grant management purposes as well as for establishing the validity of the data, agencies may use estimating and statistical methods as a means to cut their accounting costs. Such methods mut be verified with benchmark data established from actual reports at intervals.

There is no "savings" price tag attached to the current effort. It is not likely that anyone can prove subsequently what cost reductions have occurred because *management will have better financial information under the accrual basis.* However, the widespread use of the accrual basis in private industry and its success stories are an indication that the adoption of accrual accounting can be an effective tool for cost reduction. ☐

Management's Toughest Job

ORGANIZATIONAL COMMUNICATION

> *"If we could only remember at all times that the purpose of every communicative effort is to reach another human being's mind, we might understand a little better why the results will always be somewhat uncertain."*

Communication in organizations is probably the hottest topic of the last decade when managerial problems are under discussion. No training program is conducted without considering several subjects related to communication, and no conference, including scientific seminars, is without at least one learned reference on the matter.

Why is it then that we have more communicative problems than ever in most industrial, business and governmental organizations? Indeed, it is almost funny, if it were not so sad, that many of the centers of so much wisdom in this field have the greatest communication gaps among their major internal factions: students, faculty, and administration.

The Theory-Practice Gap

The answer is really simple. It is the enormous difference between the considerable theoretical knowledge we have gained in communication theory, human behavior and organizational development, and the lack of practical application of this knowledge. The greatest challenge is to interpret and convert the principles

By **WALTER WIESMAN**

Internal Communication Coordinator
NASA—Marshall Space Flight Center
Huntsville, Alabama

expounded in classrooms and lecture halls into the reality of each organization.

The major causes for this dilemma can be traced to three key issues:

1. The lack of personal involvement of top managers in the communicative process.
2. The lack of understanding of the complexity of communication on the part of professionals responsible for developing internal programs.
3. The lack of a "systems approach" in developing a program.

It is the purpose of this article to explore how an internal communication program can be developed in a Federal agency. Let me stress, however, that the basic principles are just as applicable in any other organization.

The Assumptions

Much of what serves as basis for this article was conceived in a new internal communication program in 1965 for the NASA Marshall Space Flight Center. Conclusions drawn from experiences there, feedback from professional colleagues, and academic research results lead to the following "definition and assumptions."

1. Internal (organizational) communication is the total influence of any number of factors—human and material, internal and external, tangible and intangible—on any or all members of a workforce. In short, people, things, and events constantly have a communicative effect in creating impressions and reactions.
2. Much of what contributes to this total effect is not known to management. Other factors, while known, are beyond the control of management. Communication cannot be "managed" in the usual sense of the term.
3. Certain tangible facets can be identified, planned, functionally assigned, and coordinated. Some of the less tangible aspects can be predicted, analyzed, and, for better or worse, must be coped with by management in terms of their potential impact.
4. Fullest understanding of the complexity of interpersonal communication and active involvement in the communicative process by supervisors on all levels are the prime requisites for effective internal communication.
5. The planning, conduct, and coordination of an internal communication program involves the knowledge and application of principles and practices related to a variety of communication arts and sciences, social and behavioral sciences, and other man-oriented disciplines.
6. Internal communication must have full-time professional staff attention, is never completed, and seldom provides a final answer.

"Influence" and Common Sense

Note that we do not speak of "information" as a key element, but rather of "influences." This is not simply a semantic difference, but makes all the difference on how we approach the professional planning for a program. "Planned information" is the process through which management "allows" people to find out about certain things. This function may well be primarily a journalism-oriented activity.

But when we speak of "total influence" on a group of human beings, particularly a large one with many different disciplines, interests, and backgrounds, we have an entirely different ball game. We have to cope with the principles related to "man-oriented" disciplines. Someone in the organization has to understand such factors, incorporate them with common sense into the management philosophy, and come up with pragmatic and effective applications.

It is the need for common sense in communication that makes me most apprehensive these days. We are piling new courses and terms upon all that we have not yet used. The more exotic and jargonized, the higher our training costs. The basic behavior of human beings—their needs and wants—does not change at a very rapid pace, if it ever does. We frequently ignore the ground rules of honesty, simplicity, and consistency for the sake of "sophisticated" management methods.

Key Factors

And now for a closer look at the three key factors identified at the outset as essential to effective communication.

Top Management's Involvement. The key to the success of a program will rest to a large degree on the personality and attitude of the top man. His formal endorsement of communication will not amount to anything if "his actions are not put where his words are." We all know that top management is expected to issue formal statements endorsing what the troops commonly call the "motherhood" issues. These are profound utterings often written by staff people who change a few sentences in last year's letter on the same issue. What they don't realize is that employees are quite aware that top management's heart may not really be in this issue. And down the drain goes credibility!

Not only will the top man have to mean and act what he stands for in his policies, he should also expose himself much more to the views of lower levels of supervision and employees. Results of studies presented to top management in the "staged" environment of a conference room or reading carefully worded reports, even if they do pinpoint problems, are just no substitute for personal exposure and involvement. The spontaneity and reactions in face-to-face encounters can bring about much more realistic understandings of issues in 15 minutes than two hours of a carefully rehearsed "dog-and-pony" show.

Exposure usually results in some sort of change in human beings. For the top man to get around has three main benefits: (1) he learns more about his people and products, (2) the people get to know him better, and (3) mutual understanding improves and credibility goes up. For bosses who may not have seen the light in this respect, it may be well to think of very old Chinese proverb that "salesman who sits on chair covers wrong territory."

One of the key steps to be taken by top management to assure that communication gets attention and action beyond policy statements is to accept it as a permanent function and not just something to pursue when there is a crisis. It is much too late to start communicating when opposing sides have taken positions. It was once said that "research is like savings; if started when needed, it's too late." This goes double for communication! Such action can be assured by the second key element.

Functional Responsibility. Which staff element should be charged with planning and developing an internal communication program? What sort of people need to develop an understanding of the many facets influencing communication in organizations? Who should advise top management on issues much more complex and delicate than the management of money, materials and machines?

Over the last decade this responsibility has moved slowly but surely toward the industrial relations side. As long as communication was interpreted as "passing the word" it was an information function to be found usually in the position of a step-child attached to a public information office. The same held true for industry and business where the editorial responsibility for company media was in the public relations shop. As we accepted the growing impact of social and behavioral sciences, we found a twilight zone for a while. There were, and still are, very few "practitioners" in this field. Universities were not teaching "application" of communication theories in the settings of an organization. Even today, there are relatively few universities teaching what is known now as "organizational communication."

Industrial relations concepts in industry have broadened considerably and now include many disciplines not identified in the past with the typical manpower or personnel operation. It is high time that government agencies undergo this change. Understaffed personnel offices with under-paid specialists are barely able to keep the required regulatory necessities straight. Too many of these specialists have become totally paper oriented. One point to ponder is the fact that professionals who should advise management on the intricacies of managing human beings are not considered worth higher entrance salaries according to current regulations. I submit that there is a much greater shortage of qualified employees in this area than there is in engineering and other disciplines entitled to this benefit. Little wonder that we cannot attract a new breed of professional into the manpower field in government.

Yet, when the chips are down, the Personnel Office is held responsible for this function. The Civil Service Commission has been inspecting communication for years. Higher headquarters do so in their manpower and personnel reviews. The personnel director invariably catches the blame for what is, in most instances, completely removed from his functional responsibility. Well, let's make the man responsible, but also, let's give him the authority and resources for a communication program.

While organizing a communications program in 1957 for the Personnel Director of the Army Ballistic Missile Agency, we were asked frequently, and at first even by the Civil Service Commission, what our authority for such a step was. We used to point at some modest statement somewhere in the Federal Personnel Manual holding the agency and its personnel director responsible for "a sound and effective employee relations program." We had very few arguments over our interpretation that this mandate is a very broad one and should certainly include an organized attempt to facilitate communication.

While there may have been some room for doubt about where the practical aspects of communication should be pursued in 1957, we certainly should not waste time debating this issue any longer some 12 years later.

It is high time that we accept other professionals, such as industrial psychologists, as regular members of personnel offices—not just in headquarters positions making studies with very little impact on field agencies where the action is—not in "management offices" or whatever many labels we use these days for elements involved in organizational studies. No, such people belong in the one office which is constantly confronted with the realities of human behavior and which is expected to come up with instant answers for employees, management, and unions alike. Only broadening the scope of activities normally identified with personnel offices will bring about the necessary change from theoretical studies to pragmatic advice and action.

It is only after top management is fully involved, and we have a clear idea of functional responsibilities, that we can put teeth into the third key element.

Systems Approach to Internal Communication. Our colleagues responsible for developing complex technical systems or handling logistics tasks have fully accepted the need for applying the principles of project management. There is no influential phase of the project that is not screened and weighted against its potential impact on other phases. Time tables are carefully established, frequently evaluated, and revised as new facts and problems become known. Technical "tradeoffs" are made to accommodate changing situations. Initial requirements are rewritten in the face of immovable objects. We call this the "systems approach" and we maintain expensive chart rooms and computerized information to assure the best possible "visibility" as a basis for managerial decisions.

Yet, most organizations in their efforts to assure success for their projects, approach the issue of organizational communication with stone age methods. Granted there is much less accuracy and predictability in the field of human behavior, but this could be all the more reason to handle communication in a much more orderly fashion. It is the one task which suffers most from the old management-by-crisis tactics.

When we accept the earlier stated concept that communication is a variety of influences on employees, then we understand that numerous decisions are made and actions taken every hour which have an impact on all levels of the workforce. Involved in such decisions and actions are varied individuals, functions, and organizational elements. They have charters to do certain jobs. They may not necessarily have an obligation to assure coordination and concurrences before acting. The same may be true for the views expressed by supervisors, particularly higher levels of management. Yet, the interpretations of what the employees hear and experience, as a result, can be startling.

While such "accidents" can never be eliminated completely, there are ways of at least reducing the accident rate. One of them is to make the people and organizaations most frequently involved more conscious of communicative implications—but that can often be accomplished only after something has happened. Such reviews are very important, even if under conditions of 20–20 hindsight.

The "Special Interest" Approach

One of the basic steps to be taken if we want to accomplish a higher degree of "prevention" is to identify individuals, programs, and organizational elements obviously involved in on-going communication processes. We have attempted this task at the Marshall Center by producing a model.

[Editor: *The model appears on the front cover of this issue of the Defense Management Journal.*].

Some words of explanation may produce a better understanding of this model.

There are many ways to "reach" employees. Too often, we think primarily of mass media going to all the workforce. While such media play a vital role in passing general information down the line, we can do a much better selling job by addressing groups of employees in terms of their special interests on any given issue. This, of course, takes more time and effort by determining how to best communicate such issues. But from a motivational viewpoint we can have more meaningful communication. One of the most effective methods of identification and distribution is the use of pre-gummed mailing labels produced from computerized manpower information.

The "individual" audience must, whenever possible, still be our most important target. There are many personal events in the life of an employee which deserve recognition or just a simple "thank you." Such events may be rather unimportant in the total context of a large organization, but they are vital to the employee and his family. Management, on all levels, should make the most of every such opportunity. But we must not expect members of upper-middle and top management to personally keep track of events worth recognizing and to initiate the appropriate action. Staff work becomes an important part of this action, particularly on the part of communication specialists. There is certainly nothing novel about the idea of personal recognition, yet it is surprising how many fine opportunities are missed for lack of attention.

Inside and Outside Contributors

There are many "internal contributors" to communication. There are two categories; "hardware" and "software" contributors. The former make substantive contributions through information media, professional work, distribution system, etc. The latter have numerous contacts with all parts of the work force, make observations, form qualified professional opinions, and can thus be a major contributor to an effective feedback system.

The better use of the "hardware" contributors may well be the least explored phase of most communication efforts. Making the most of the spin-off effect from their functions can produce professional results we can achieve otherwise only if we duplicate this combined capability in a communication staff—certainly a highly uneconomical step. We have encountered no problems in obtaining the fullest assistance from these functions. Indeed, once they understand their potential contribution, they will develop many ideas on how to better apply what they have to offer.

Many "external contributors" can have quite an impact on employees, particularly with the growing involvement of many project partners in other government agencies, industries, research institutes, and universities. Their actions, successes and failures can influence employee morale as much as anything happening in-house. Just the basic understanding for the need for contractual relationships requires much more effective communication.

In this area, too, we have failed to explore how much information is available from many sources in the interest of better employee information. General employment policy, benefits, job opportunities, and other such factors can be conveyed with much information available from the Civil Service Commission and other Federal agencies. Most of this material is free and is better designed and produced than we could do it, even if we had the money. It should be remembered at this point that we take it too much for granted that Federal employees know all about the above mentioned factors. Even if they once knew, regular reminders will refresh their memories. A number of these reminders are even mandatory according to personnel regulations.

Other contributions are made by professional, cultural, and civic groups, as well as agencies of state and local governments. We cannot discount community relations, its impact on employee relations, and a community environment needed for a sound employment program.

Communicative assistance is needed for programs "requiring employee understanding, acceptance and participation." We have listed the most commonly talked-about programs. There are other permanent or one-time tasks requiring such assistance. Here, too, we frequently misjudge the knowledge of an interest in such programs on the part of employees. People with long service have gone "through the motions" year after year. Younger employees are influenced by the apathy of the older ones.

Such programs do not lend themselves to self-renewal. They will have to be resold time and again. Just finding a new slogan for an annual campaign will simply not do. Meaningful interpretations must come forth telling the employees in specific terms what might be accomplished in their personal and the agency's interest. Using the rifle instead of a shotgun in communicating on these matters will produce much better results. A timely, cooperative effort between program managers and communication specialists is an absolute must.

The Specialist-Supervisor Interface

The matter of "supervisory involvement" is a rather delicate issue. The communication specialist cannot be there the moment the supervisor faces an employee or a group of people and will have to demonstrate that all his training is paying off. Only too often, a manager will blow his chance at this moment of truth. A continuous effort is necessary to create an awareness of the involvement. This is an ambiguous undertaking that cannot be accomplished solely by pouring more training on the guy. Mailings with short, effective items—often reprints of good articles—will assist in this task; so will personal contact between supervisors and communication specialists.

What will help considerably is for top management to create a climate which motivates supervisors to pay more attention to the human aspects of their job. There is a particular danger for supervisors coming out of scientific and technical disciplines to continue their "work" after entering the ranks of management as if nothing had really happened. They forget that they receive the additional money for coping with managerial challenges, mostly people problems. Their failure to act like managers not only shortchanges the organizational goals, but is a major source of employee frustration and anxiety.

The Staff's Job

Finally, there is the "communication staff." Its prime job is to identify communicative challenges, opportunities and problems, and to assure that the people most involved understand their part and act. The staff cannot, and should not, be a substitute for the actions which are clearly the domain of other individuals and functions. I hope it becomes obvious after another glance at our model that a communication staff acts primarily as a catalyst. In-house consulting is a second major task. To be on call for all occasions and for all people must be viewed as a vital requirement. The evaluation of varied feedback from many sources and the presentation of resulting conclusions to management is part of the staff's job.

We have started an interesting method to do some of our in-house research through the use of doctoral candidates. We hire such specialists under a cooperative student agreement at a salary appropriate for a social scientist with a master's degree. There is no contract with the respective university and none of the usual high overhead costs accompanying such contracts. The universities are happy to place their candidates in a setting such as our agency for their dissertation research, and we are getting effective jobs done at a relatively low cost. As to the use of consultants, we prefer the employment of a highly qualified faculty member as a summer employee to the sporadic and expensive hiring of consultants for a few days at a time throughout the year. We hope to eventually develop a research master plan into which we can schedule not only advanced degree candidates and consultants, but also our employees working on advanced degrees.

In Conclusion—

Needless to say, such a first model can identify mostly the more tangible aspects of our organizational communication. We believe that if we tackle all of these tasks in a professional way, we will have walked more than the proverbial first mile. We may even find that many of the intangible issues have been prevented or their impact lessened, but we are not naive enough to think that we have found a real answer to communication. We doubt that this will ever happen.

Communication is an art, not a science. While much scientific effort and evidence influences us, the application, whether in supervisory face-to-face encounters or information processes through media, remains an art. If we could only remember at all times that the purpose of every communicative effort is to reach another human being's mind, we might understand a little better why the results will always be somewhat uncertain. ☐

OPPORTUNITY KNOCKS FOR VALUE ENGINEERS

By **BRUCE D. WHITWELL**

Writing recently in the *Defense Management Journal*[1] Messrs. Allen and Romani said: "Value engineering techniques have been in active use for the past 20 years. These techniques have demonstrated their value to many companies. Yet value engineering has not reached the widespread level of use its proponents would like to see."

It would, however, be wrong to gain the impression that nothing is being done about this. As recently as a few months ago the national president of the Society of American Value Engineers (Mr. Robert L. Crouse) in the Twin City Chapter's newsletter[2] said: "I would love to have my home chapter develop evidence of at least 10 significant new industrial or commercial applications of value engineering."

Value engineering as a concept has now come of age. Value engineers in the main have been devoting their

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[1] *Defense Management Journal*, Vol. IV, No. 4, p. 33—"Barriers to Value Engineering Growth" by G. R. Allen and P. N. Romani.

[2] Reported in *Value Engineering Digest*, Vol. 11, No. 10, p. 3.

—Consulting Economist Proposes International Value Engineering Federation—

attention to their here-and-now problems of their jobs. These value engineers and others according to Mr. Fred Schwarz[3] are now asking what will value engineering be like in 1979?

It is for these value engineers that opportunity knocks.

Opportunity will knock; for value engineering will become much more widely accepted as it is demonstrated by practical application that its principles can be applied to:

☐ Systems
☐ Processes
☐ Local government expenditures
☐ Overhead costs
☐ Services
☐ Research and development; and even to
☐ Plant layout problems.

Value engineers, because of the nature of value engineering, should be in the van of the second generation scientific management people. This second generation of managers are, of necessity, being forced to become product/value oriented.[4]

To be in the forefront of this movement, value engineers will need to be informed of the progress being made in their field. The idea of a survey of value engineers arose from a desire, as editor of the journal *Value Engineering,* to know more about value engineers so that the journal could serve them better.

An Identikit Value Engineer

There were 899 respondents to a worldwide survey which was conducted toward the end of 1968. Replies came in from members of SAVE, ScanVAVE, the British and Japanese value engineering groups, as well as from value engineers not belonging to any such body.

These responses came from Australia, Belgium, Britain, Canada, Czechslovakia, Denmark, France, India,

Bruce Whitwell, a consulting economist, is president of the British Value Engineering Association.

A graduate engineer and economist, for the past 2 years he has been honorary editor of *Value Engineering*—a journal which is published by Pergamon Press.

In a letter accepting the presidency of the British Value Engineering Association, Bruce Whitwell recorded these views:

"Firstly, there can be few activities that can be more effective for human good than the allocation of resources by means of the principles of value engineering as laid down by Mr. Larry Niles and his contemporaries.

"Secondly, any actions—such as those of your association (i.e. the British Value Engineering Association) and the several other societies of value engineers—which contribute towards widening the acceptance of value engineering and increasing the image of competence (and thereby recognition) of value engineers must contribute towards the common good of all mankind, the extinction of poverty, and extension and preservation of international goodwill."

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[3] *SAVE Proceedings 1969 National Conference,* p. 227—"Value Engineering 1969–1979 by F. C. Schwarz.

[4] *SAVE Proceedings 1969 National Conference,* p. 197—"Value Improvement and Corporate Strategy" by C. Rand.

Italy, Japan, Yugoslavia, Norway, Poland, South Africa, Sweden, U.S.A., U.S.S.R., and West Germany. Notable omissions were Argentina, Austria, Brazil, Ireland, Netherlands and Spain, although value engineers are certainly known to be working in some of these countries.

The broad objects of the survey were to try to find out:

- How is the value engineer being employed in industry? (Not how his management *thinks* he is employed.)
- What assistance in his work of *value engineering* is he deriving from his qualifications and experience?
- How effectively is he being used *as a value engineer?*
- What are his remuneration and conditions of employment?
- What are his aspirations and career prospects?

It was felt that the answers to these questions would provide a tiny platform of facts in the space of misinformation, prejudice, assumptions and guesswork which surrounds the world of value engineering.

The survey did show that, although in the history of business the value engineer's time-span has been comparatively short, his progress has been rapid and his future beckons invitingly. At present there are probably some 8,000 full-time value engineers employed *in private industry* throughout the world, and indications are that the next few years will see 2,000 more.

It would be incorrect to give the impression that this survey was the first inquiry into the activities of value engineers. To the writer's knowledge Messrs. Nudge and Rodgers have also conducted explorations. However, this survey is the first to be conducted of value engineers operating throughout the world, engaged in private industry, and not necessarily having any institutional affiliation. Value engineers engaged in Government and armed services, and value engineering consultants were deliberately excluded from the survey.

The survey showed value engineers to be on a steady growth rate; their growth in the Sixties to have been a real upsurge; and the main single cause of this to be the DoD's marked interest in value engineering. There were, however, other forces influencing this growth—the growth in the size of the business firm; the increasing complexity of business itself; the inexorable steady rise in the cost of materials and wages; and the expansion of international trade and competition.

Value engineers should not just accept the evidence of this growth pattern in their numbers in a complacent, self-congratulatory mood. Rather, they should be asking themselves:

- Is the disenchantment revealed by many of their colleagues a mirror of their own feelings about value engineering?
- When a large number of respondents report that they can't get their ideas across are readers experiencing a similar trouble?

He Who Affirms Must Prove

An enthusiast (like the writer) is apt to interpret the replies from the survey in the light of his own interest. Let me illustrate. A tailor who went to Rome managed to get an audience with the Pope. On his return home a friend asked him: "What did the Holy Father look like?" The tailor replied: "He was a regular 41." The writer has tried to suppress has own views of what a value engineer looks like, and to convey to the reader what the 899 replies revealed. What does a value engineer look like? What sort of people are value engineers?

They will almost certainly be men, but will this change? According to Mrs. Patricia Livingston[5] women have something special to contribute to value engineering, and there are bound to be more women value engineers by 1979. Sixty-five percent of the respondent value engineers were in the 32–45 age group. The age structure of value engineers is a relatively old one. The fact that few value engineers are under 30 may well mean that value engineers cannot aspire to appointment at an early age (or stage) in their careers.

Of the 203 respondents who possessed university degrees or equivalent qualifications, 72 had majored in engineering, 24 held arts degrees, 21 were business-oriented, 62 had done post-graduate work and 130 had undertaken formal value engineering training. The inference is that 75 percent of value engineers have no university or technical institution qualifications. It was noted that many academically qualified value engineers held dual qualifications in the engineering and business fields.

Value engineers have a far greater job mobility than many of their colleagues in industry. According to the replies only 16 percent of value engineers have been employed by only one organization. Seventeen have had six or more employers! A striking number of value engineers appeared to be "refugees" from their own businesses. Interesting!

Now—to take a little walk in space—to consider what it is that makes a good value engineer. Here we are stepping off our tiny platform of facts into the space which I referred to earlier, and—with all the problems of "weightlessness" we are trying to read into the 899 replies more than they superficially appear to say. A good value engineer is certainly the possessor of:

☐ Self-confidence
☐ Initiative
☐ Persistence

and so on—traits described by Mr. Hancock at the SAVE 1968 National Conference in Atlanta, Ga.[6]

In the eyes of the Greek bureaucrats, the teaching of Socrates corrupted the youth of Athens. In this sense, value engineering is also a subversive activity. Its results tend to overthrow established opinions and accepted beliefs. The value engineer, therefore, must possess *courage.*

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[5] *SAVE Proceedings 1968 National Conference*, p. 43—"A New Voice in Value Engineering" by Mrs. Patricia Livingston.

[6] *SAVE Proceedings 1968 National Conference*, "What Makes a Good Value Engineer" by W. A. Hancock.

Mr. Carlos Fallon's clarion call to value engineers that measurement can establish their place in the sun [7] must not, in the future, go unheeded. Numeracy—according to this forward-thinker—must be in the modern value engineer's repertoire of skills.

According to Mr. Larry Niles—one of the pathfinders of value engineering—"If there is no comparison, there is no evaluation." [8] Value engineers should turn to the writings of Messrs. Mudge [9], Garratt [10], and Decker [11] and garner some of the rich thoughts sown by these outriders in the areas of functional evaluation, and verifiable function.

It does not take long for today to become yesterday and so *inquisitiveness* about what is new is certainly a requirement of a good value engineer. As you can't have success without failure, *resilience*—too—is a must. Bearing in mind the difficulty, the value engineer's ability to effect change as well as to initiate change is a most important measure of a good value engineer.

Trained or Educated Value Engineers

Perusal of the replies to the survey led the writer to question whether value engineers were being trained or educated? Training as we know can only sharpen techniques; it takes education to bring about attitude changes.

Value engineers—along with the rest of Management—will have to undergo attitude changes if they are to cope with the realities of the situations which they encounter in their daily work.

Many value engineers hold that the teaching of the principles of the subject should begin in the engineering schools where it seems to be fighting a losing battle with the many rival claimants for syllabus time. As a result of this lack of early training engineers are left to acquire the technique of value engineering when they begin work. The subject of value engineering is perfectly respectable from an academic point of view and could be incorporated in an engineering (or business) diploma or degree course.

Inquiry into the usefulness of selected areas of knowledge to value engineers yielded, as a byproduct, the opinion that value engineers as a whole are rather circumscribed in their interests and knowledge of related techniques. To mention some of the different subjects in which value engineers indicated they would welcome more training:

☐ Cost analysis
☐ Function/Cost analysis
☐ Functional evaluation
☐ Systematic evaluation of ideas
☐ Search techniques
☐ Decision theory
☐ Group dynamics
☐ Negotiating techniques
☐ Fortran IV programming
☐ Visual presentation of results
☐ Foreign languages

At today's rate of change a value engineer has a "half life" of about 10 years. That is to say, half of what he now knows will be obsolete by 1979. Put another way—half of what he will need to know in 1979 has not yet been discovered!

It would appear from the survey that value engineers are more interested in seeing man disturbing the dust on the moon's surface than they are in disturbing the dust on the covers of their value engineering books. It is frightening to think of value engineering being in the hands of a respondent who wrote regarding his VE book reading habits: "Sorry—but don't know of any." At least he had the decency to be sorry!

What do value engineers think of their function?

It was Alfred North Whitehead, the Cambridge mathematician and philosopher who spent the latter part of his life at Harvard, who said: "A great society is a society in which its men of business think greatly of their function."

What do value engineers as "men of business" think of their function? Do they think greatly? What about those 2,100 value engineers who were too busy (or disinterested) to answer the survey questionnairs which they received?

To find out how value engineers actually spend their working lives might be helpful. Are they—as Aristotle put it—doing what they can do, well; or are they being made the odd-job men, "the cold Coca-Cola and hot coffee boys" as one disillusioned value engineer puts it? From the survey, very few value engineers are leading "the good life", i.e. doing what one can do well. They are (many of them at least) spreading their time over

- Systems—statistics—and suggestion schemes
- Planning—purchasing/and production
- Working from automation to zero defects.

Most value engineers divide the time which they devote to value engineering more or less equally between cost-prevention and cost-reduction work. Far too few spend as much time as they consider necessary on the promotion of the VE philosophy in their organizations. Very little is being done to explain the VE technique to supervisory, union and shop-floor people.

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[7] *SAVE Proceedings 1968 National Conference,* p. 87.

[8] Miles, L. D. *Technique of Value Analysis and Engineering* (McGraw Hill).

[9] *SAVE Proceedings 1967 National Conference,* p. 111—"Numerical Evaluation of Functional Relationships" by A. E. Mudge.

[10] *Value Engineering,* Vol. 2, No. 1, June 1969, p. 21—"Theoretical Evaluation of Function" by Arthur Garratt.

[11] *Value Engineering,* Vol. 1, No. 6, March 1969, p. 337—"Cost Visibility and the Value Engineering Functional Cost Analysis" by Bert J. Decker.

Value engineers indicated the following "plusses" and "minuses". They derive job satisfaction from:

- being able to speak directly to management, and
- succeeding in getting their ideas accepted.

They find least satisfaction in

- working to meet tight schedules, and
- report writing.

Are trained value engineers, who are in such short supply, being effectively utilized? Over half who replied reckon their expertise is not being fully utilized. It appears that this feeling is most pronounced in regard to the selection of actual products for them to value analyse.

The next most significant weakness is ineffective cooperation with other departments.

What are the real results which value engineers produce? They are synergists. They share with others in producing solutions, they pool knowldege and insights, the result of their presence *is greater in sum than in parts*. As a Japanese respondent so nicely put it: "Value engineering contributes so much to the betterment of human relations in our company."

A particularly encouraging aspect of value engineering revealed by the survey is its current interdisciplinary trend. The subject value engineering, one might say, is becoming more and more a colloidal solution of various disciplines. In value engineering we have a technique which provides, and will continue to provide, a meeting ground for theorists, engineers, purchasing men and innovators.

Value Engineers or Resource Stewards?

Respondents indicated an expected 23 percent increase in demand for value engineers in their companies in the next 2 years. This increase may be higher because no account has been taken of firms not employing value engineers at present who may decide to employ them in future. Thus the growth rate of value engineers of 37 percent over the next 10 years is likely to be on the low side. Thus, for value engineers their career prospects are bright, and most value engineers believe they have fairly good prospects of entering general management.

Inside every value engineer there seems to be a senior manager trying to get out. This could well be a good thing for value engineering; for value engineers who become managers, are likely to have a greater understanding of the problems confronting value engineers.

This survey has shown that the value engineer has become an increasingly important figure on the world business scene. The Minister of Technology in the British Government, Mr. Wedgwood Benn, is reported recently as saying: "Certainly the management of resources—efficiently, intelligently and humanely—will be the determining factor in shaping the society in which our children will have to live."

The success of value engineering, according to Mr. Czerwinski[12] "is based on attitudes of people . . . Through change of attitudes we achieve best utilization of resources . . . This is the secret of success of value engineering." Another writer points the relevance of value engineering to the economy[13] advocating a huge econometric (or value) simulator be set up. This writer holds that value engineering should be applied consciously (not intuitively) to our major national decisions.

Ideas for the effective use of resources

It is only right that with their training in making value judgments, that value engineers should have jet-age ideas for the more effective use of world resources. To acquire these advanced ideas more and more value research is needed. Such pursuits (speculative or experimental) often lead, penultimately, to a blind alley; but it should be borne in mind that such negative results are themselves positive contributions to knowledge. John Donne put it well:

> "*Doubt wisely . . . On a huge hill,*
> *Cragged, and steep, Truth Stands, and he that will*
> *Reach her, about must, and about must go . . .*"

Furthermore, the practice of research will undoubtedly have a marked beneficial effect on the quality of value engineering work generally, not just on the study of resources allocation in the wider national field.

Several of the published proceedings of the SAVE National Conferences touch upon some significant areas for advances in value engineering methods, most notable perhaps being the application of machine intelligence to the handling and solution of value problems by value engineers themselves. In the use of computers value engineers have a nascent technique which will assist them greatly, and the value engineer who plans to maintain his place in the value engineering of the Seventies cannot afford to be without computer understanding.

Value Engineering With the Aid of Computers

Before value engineers can operate effectively on complex value problems they must possess considerably increased capability to handle all the relevant data of such problems. They must have easy access to all the necessary backup information, be able to scientifically evaluate functions, generate creative ideas, select the best alternative, follow up the implementation of the chosen idea, and measure both the interim and final progress and results.

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[12] *SAVE Proceedings 1966 National Convention*, p. 265—"VE—Management: The Present State of Affairs" by L. Czerwinski.

[13] *SAVE Proceedings 1969 National Conference*, p. 5—"The Ultimate Application of VE".

The future role of the computer in value engineering will be threefold—

(1) As an information "bank",
(2) For purposes of comparison and evaluation, and
(3) To monitor progress.

While computer application is one of the keys to efficient large-scale value engineering practice, the problem of extending its use still remains open. At present the main limitation is an economic one for at the practical level the computer is ready.

In the widely diversified and highly competitive economies of Europe and America the best computer facility would be a central service agency where different sectors of industry could subscribe to specific programing using a common data bank. But this, of course, is full of difficulties as industry would oppose any suggestion for pooling any special technical information. As only the biggest industrial groups can afford to own and maintain their own computers, an alternative is an independent computer service supplied with the assistance of specialist value engineering consultants.

Mr. Gouze [14] is of opinion that more and more emphasis will be placed by consultants on—

- Developing complete value engineering systems tailored to suit the particular client company.
- Conducting both fundamental and applied research into value problems and their solution.
- Building up and maintaining value data banks.
- Making independent value audits as part of profit-improvement activities of companies.
- Providing company managements with an independent service for planning and controlling value engineering activities and verifying the results achieved.

As well as progress in these mechanistic aspects of value engineering, there will be further understanding of the barriers to perception, ideation and acceptance.[15] And, according to Mr. Underwood, when we look at value engineering through a microscope instead of a telescope we fasten our attention on the inescapable fact, that it is a technique which for its succcessful carrying out requires personal motivation.[16]

The value engineer in the next decade will find himself the possessor of extended capabilities (as for instance, the possibility of obtaining closer limits by the use of powder metallurgy) and a party to a transfer of emphasis (from, say, producibility to plant maintenance). He will become involved in a field in which he now plays only a minor part—the designing of the machinery itself. Value engineers will also be engaged in politics, government, office procedures, and overhead costs; and they will use a wide range of disciplines from Accounting to Zero Defects. It is Mr. Jenkins' contention [17] that value engineering as yet has only touched the fringes of the possibilities for Programmed Instruction. Studies have shown that both training and teaching time have been substantially reduced by the use of P.I. The extended application of P.I. will enable:

- The benefit of value engineering methodology to be extended to more people more quickly.
- The training in value engineering to be done more easily and on an in-plant or in-school extra-curricula basis.
- The results of the training to be more positively measured and more factually controlled.

"Space Is There and We're Going To Climb It"

It is sure that some value engineers, like President Kennedy said, are going to react to this article. They may shoot off some verbal retrorockets aimed at getting the several VE associations and societies out of their national orbits into the fresh and challenging orbit of an International Value Engineering Federation. IVEF could be dedicated to a much wider application of functional cost analysis! When one considers the much larger watershed from which value engineers could fill an international-scale reservoir, there should be no doubt whatever about the success of such an enterprise.

To be practical—what about those interested value engineers commenting to the author on the suggestion that a working party be set up composed of equal numbers of experienced value engineers from all nations with terms of reference to set up an International Value Engineering Federation?

Two thousand years ago, Lucretius described how the world came into being; not in conformity with abstract theory, but because a myriad of atoms linked hands and explored all they could produce by changing partners; and after jiggling and joggling coalesced to form the embryo of a vast endeavour.

Couldn't IVEF be "the embryo of a vast endeavour"?

For value engineers, too—Opportunity Knocks. ☐

Author's Acknowledgement

The ideas developed in this paper are clearly but slight extensions of those which have already been put forward by speakers at the SAVE conferences, by the writers of books on value engineering, and by the 899 respondents to the Survey of Value Engineers in Private Industry. I also wish to thank Messrs. E. Oppenheim, R. Kempter and Tony Tocco for helpful and productive conversations I have had with them on the subject matter of the paper.

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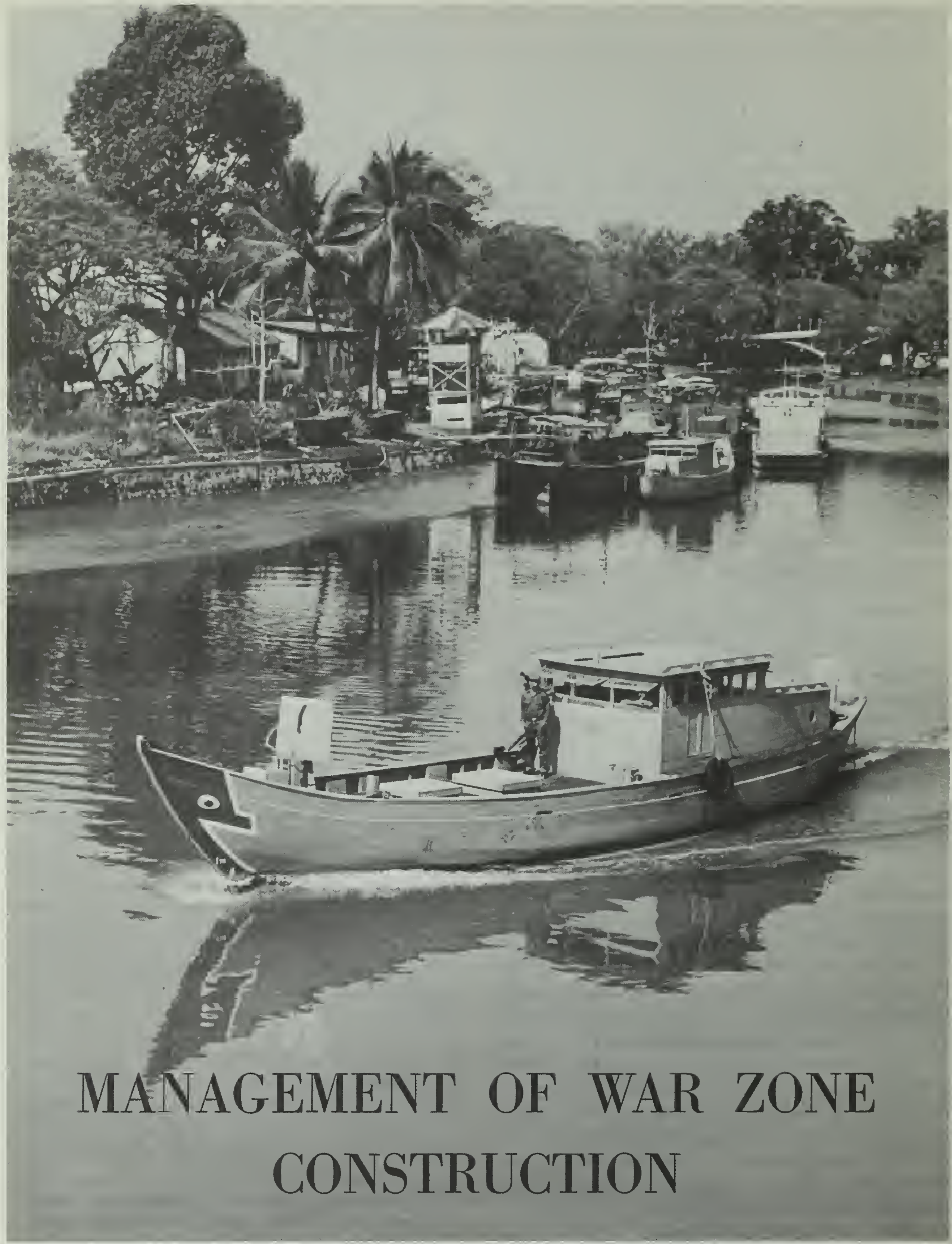
[14] *SAVE Proceedings 1968 National Conference*, p. 21—"The Use of Consultants in VE" by G. Gouze.

[15] *SAVE Proceedings 1968 National Conference*, p. 107—"A New Approach to VE from Cultural Anthropology" by S. F. Love.

[16] *SAVE Proceedings 1966 National Convention*, p. 4.

[17] *SAVE Proceedings 1968 National Conference*, p. 11—"VE Training and Orientation—Past, Present and Future" by R. B. Jenkins.

MANAGEMENT OF WAR ZONE CONSTRUCTION



Junks patrol Vietnam's coastal waterways and harbors in Operation Market Time.

RESTORING PEACE and freedom in South Vietnam carries the obligation to assist the South Vietnamese in nation building in its broadest sense—and that obligation must be discharged as economically and efficiently as possible to prevent unnecessary burdens on our economy.

Nation building in this "have-not" country requires real property facilities. These facilities serve to unite, politically and economically, thousands of hamlets, villages and cities as well as to support the military operations that are preserving freedom and self-determination in South Vietnam. They include airfields, military bases, deep-water harbors and ports, inland waterways, warehouses, schools, bridges, hundreds of miles of roads and utility systems.

Unprecedented Problems

The urgent need for these facilities, the staggering volume of the requirements, and the lack of sufficient construction resources posed problems of unprecedented scope. The construction effort, costing in excess of 2 billion dollars, presented all the normal logistic problems, not to mention the constant harassment of enemy activity. For instance, since construction material and equipment was not available within South Vietnam, it appeared that total reliance would have to be placed on the many thousands of miles of supply lines to the United States and its allies for these materials. Through aggressive management review, considerable progress was made in the development of the nation's raw material resources. This was particularly true in the production of those mineral products required for construction and road building.

Solutions to basic problems also offered related benefits. Major dredging projects, for example, not only developed from scratch harbors and inland waterways but also produced, as a byproduct, high quality sand vitally needed for runways and landfill operations.

Lack of Skilled Manpower

Another construction drawback was the almost total lack of trained manpower to handle work of this magnitude and complexity. Manpower requirements far exceeded the locally available resources. The resources of the various troop engineer units likewise were insufficient to meet the total demand. Therefore, several of the largest construction firms in the United States were invited to meet this need. To date, a major portion of the military construction has been performed by a joint venture of four American firms operating under a cost-plus-award-fee contract under direction of the Naval Facilities Engineering Command.

Aside from their contribution to the war effort and to nation building in the form of desperately needed facilities, these firms developed and conducted training programs for approximately 150,000 South Vietnamese. It is not unusual today to see men and women whose previous experience was limited to oxcarts or bicycles dexterously operating gigantic earthmoving equipment.

Cost Consciousness

Military urgency need not mean high costs. Conversely, cost cutting actions in today's war zone environment need not increase the risk to life and limb.

In World War II, a disabled plane was often pushed over the side of a carrier because time and distance dictated against risking the effectiveness of the carrier by burdening it with inoperable craft awaiting replacement components. Today, through the coordination of modern communications, computers and transport,

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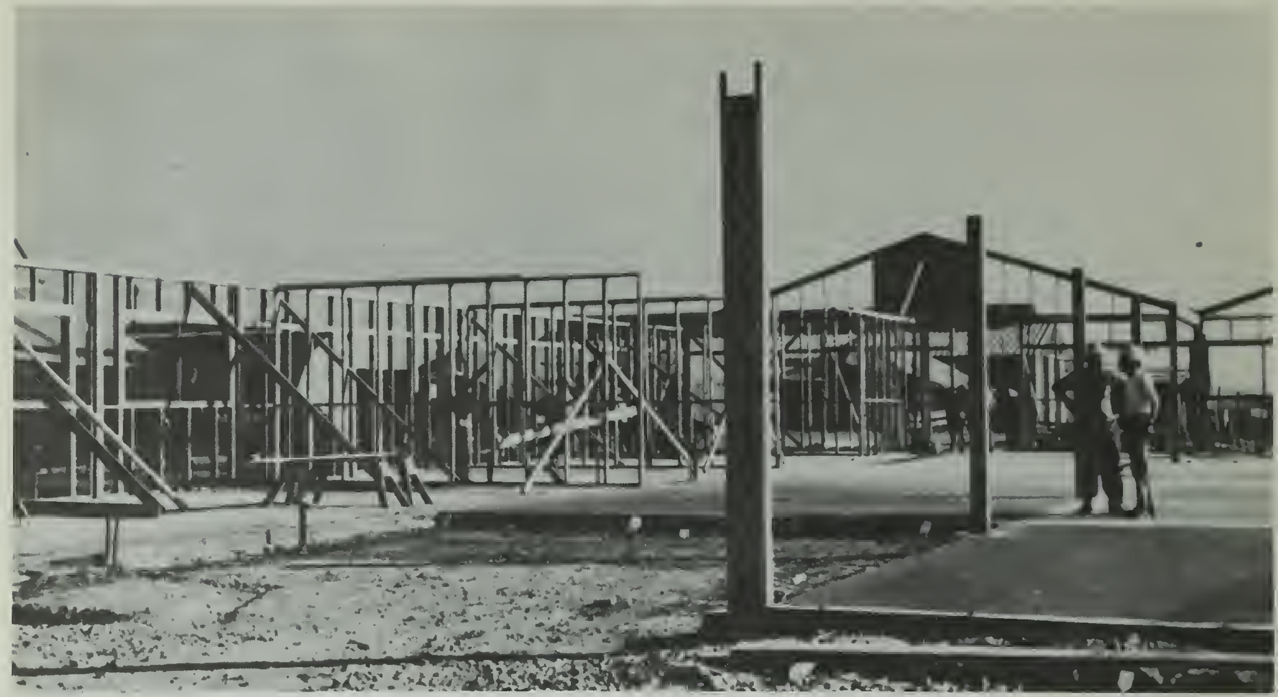
By **H. J. JOHNSON, RADM, CEC, USN**
Deputy Commander
Pacific Division, Southeast Asia
Naval Facilities Engineering Command, RVN
FPO San Francisco 96626



Finance Building, Chu Lai. Changes in specification of lumber used throughout South Vietnam saved over $500,000.00 in fiscal year 1969.

those vital components are within a few hours reach. Discarding a million dollar plane for want of a thousand dollar component is no longer an acceptable alternative, just as war zone construction without value engineering and sound review in the field is no longer acceptable.

For example, an urgent requirement arose for a water treatment and distribution system for the Danang area. The project, as originally designed and approved for construction, called for a complete water treatment facility near Monkey Mountain at a cost of about $717,000; however, a value engineering study explored less costly alternatives. Imaginative research and exploration showed that upgrading an existing water treatment facility a few miles away more than adequately satisfied the requirement. The resulting construction was performed at a cost of $79,440—a cost reduction of $637,560.

Economy Must Be Promoted

The methods of achieving cost reduction in a normal environment apply equally to a war zone environment. Cost reduction in OICC RVN resulted from a program to induce and encourage cost consciousness throughout the organization; a program conceived and actively supported by command. To be effective the program elements included organization, slogans, attainable goals, publicity and aggressive review.

The organization consisted of one officer assigned collateral duty as the cost reduction officer; a full time coordinator; a staff of representatives from each department; and counterpart representatives from the staff of the CPAF contractor. The function of the representatives, performed in addition to their regularly assigned duties, was to serve as the departmental focal points for program publicity, research and documentation. The function of the full time coordinator was to train the representatives in the disciplines of true cost reduction identification and documentation; to monitor and coordinate their efforts; to maintain effective liaison with the auditing agencies and the coordinators of higher commands; and to prepare reports and correspondence. The function of the cost reduction officer is to administer the program, devise program concepts, measure performance, and conduct final activity review of proposed actions. Above all, his function is to insure program credibility.

The assignment of dollar goals or measuring performance in terms of dollars saved may be effective between commands, but may not be equally effective within a command. One bad effect of a dollar quota is the all-out effort to meet it followed by relative inactivity until the next program comes along. This is report consciousness rather than cost consciousness. Crash programs to come up with savings actions also are generally resolved at the department's higher echelons and rarely seep down to the working level.

It is often most difficult to arrive at an equitable dollar goal distribution among departments which differ in nature or size. One device for a continuing program and for fair comparison of activity among the departments is to chart it in terms of the number of cost reduction actions reported by each department and the number successfully validated. Not only will this induce competition it also gives equal recognition to actions of the smaller departments regardless of their dollar impact on the program as a whole. The chart of relative performance, suitably displayed, will itself induce competition without an assignment of goals.

Benefits of Charting

One of the smaller departments of the OICC RVN was surprised by the inference conveyed by the chart that it was not cost-conscious despite their own conviction that they were more so, relatively speaking, than any of the other departments. To prove their conviction they attempted to document their saving actions and were surprised to find that they could not be substantiated. Generally, they realized that their actions resulted in deferred spending, decrease of service, or shift of responsibility. This self-analysis induced by the comparative chart was most beneficial to them and the command. They now understand that true cost reduction consists of providing equal or greater service at lesser cost. This understanding is now evidenced by their charted performance.

Cost consciousness must be induced in every member of the command. Publicity, preferably through word of mouth, must be constant. True cost consciousness in an activity produces savings actions from lower echelons rather than solely from higher management. Notwithstanding the pressure of military requirements which depend on quick response to be effective, it has been found that personnel, if properly motivated, do come up with better ideas. For example:

Chu Lai Highway. Use of photogrammetry in place of field survey teams will save $4,830,500 on RVN highway design.

- The resident officer in charge of construction (ROICC) in the III Corps Area, by relocating a substation and connecting to an existing underground power line, eliminated the need for over 3,000 feet of primary power line—a saving of $14,500.
- A more striking action in the sense of the amount of savings involved was a management action changing the method of field surveying for highway construction. The normal practice was to send field survey teams into the various areas where roads were to be constructed to gather the data necessary to design the various highway segments. These teams were working to a large extent in hostile territory with the attendant dangers and poor quality of survey. One young officer proposed the use of aerial photography and photogrammetry techniques which would produce excellent quality surveys yet cut the cost of surveying from $5,400 per kilometer to $3,100 per kilometer for a total savings for fiscal year 1969 and fiscal year 1970 of $4,830,500.
- Yet another excellent example of cost consciousness at work is the use of computers for measuring quantities of earth to be moved in dredging operations. Prior to the management action which produced this savings, the OICC RVN would receive hydrographic surveys which showed the existing profile of a waterway bed, and what the profile should be to allow passage of various vessels. From this survey two engineers were continuously engaged in computing the amount of earth to be moved to produce the new profile. An ADP program package for highway earth moving computations was modified and adapted for use in underwater earth movement. As a result, the two engineers were relieved of all computations in connection with dredging. Approximately $18,000 will be saved this fiscal year because of this act of cost consciousness.

Program Builds Up Steam

At the outset of a revitalized cost reduction program, the initial actions submitted will simply be statements of the normal activities of individuals as they go through their daily decision processes in the resolution of problems other than those of money. As successful validations arise from these and as word of recognition in the form of a compliment from the boss, or a letter from the command gets around, a shift will occur whereby the daily decision processes will include cost reduction seeking as a matter of routine.

In the final analysis the "proof of the pudding" of an effective cost reduction program is the extent to which the activity delivers a greater quantity and quality of its assigned product at less cost. In Navy-managed construction in the Republic of Vietnam, the cost reduction program in fiscal year 1969 saved 13 million dollars. ☐

(Editorial, continued from p. 3)

Those in mufti came through too—like retired Army LTC William D. Harris, an instructor and licensed radioactive materials handler, who found a $25 substitute for the $4,750 Radiation Survey Training Set required by the Disaster Control School at Eglin AFB, Florida.

And, of course, the Defense Department's 1.2 million civilians were overwhelmingly apparent in the cost reduction picture—among them, many foreign nationals.

- Yi Joe Bom, a Korean employed by the U.S. Army Inchon Petroleum Depot, received a cash award equivalent to a year's wages ($500) for showing the Army how to cut tankcar cleaning costs $8,000 annually.
- Bungo Ushioda, Hideo Hiroyama, Tokoji Harai, and Yashikuru Kamagayo—all Japanese nationals—teamed up as a cost-cutting council to streamline furniture repair processes for the U.S. Army Depot Command, Japan.
- Yi Ki Su, a Korean communications foreman, eliminated a $382,000 requirement for long distance dialing equipment by doubling the capacity of existing equipment through a $4,200 modification.

Most savings, though, are as American as Las Vegas where the 865th Radar Squadron rolled its point by preventing $281,000 of high-power tube burnouts. It did this by arranging with the Nevada Power Company for advance warning of power fluctuations and outages and then switching to in-house generators to assure consistent power supply. Most savings are as domestic as the homebrews whipped up by—

- MSgt Gaylor Taylor who concocted a reagent for testing anti-icing additives in jet propellant fuel at $1.18 per vial to replace the commercial reagent at $1.70 a vial, saving $1,148.
- The Army's Aerobiology and Evaluation Laboratory at Ft. Detrick, Maryland, which devised a "moonshine" still to distill clear freon from the greasy, contaminated leftovers of previous tests, saving $500.
- SSG Clyde Marstellar of Brooke Army Medical Center, Fort Sam Houston, Texas, who developed an eight-cent-a-liter artificial serum for clinical chemistry classes to replace the $80 per liter genuine serum previously used, saving $16,200.

Of course, recipe-making is not the exclusive province of the male. Katherine E. Reubart—housewife (and Supervisory Production Controller of the Army Ammunition and Supply Agency, Joliet, Illinois)—joined with two co-workers to reblend propellant powder from excess ammunition into the right mixture for new propellant requirements, saving the Army over $5 million.

Moreover, the talents of the Defense Department's distaff side extend well beyond mixes, as witness:

- A visit to a dental supplies trade show drilled $28,000 from Defense costs when Mrs. Genevieve Probst, a supervisory dental engineer at the Defense Personnel Support Center in Philadelphia, saw that a 37 cent plastic spatula stirred silicate just as well as the $6.50 chrome cobalt type the Defense Department had been buying.
- A side-by-side comparison of bookcovers by publications expert Hazel Hanback caused the Navy to switch from the $1.04 elastic plyhide binder to the 28 cent polyethylene plastic binder—leading to a quantity saving of $72,000.

- Helen Vogt, a Supervisory Inventory Management Specialist at the Army Ammunition Procurement and Supply Agency in Joliet, Illinois, saved $242,000 by showing the Army how to more accurately predict its requirements for atomic-weapon cartridges.
- Mildred Kurz saved the Army $395,000 by showing how repair cycle time for solenoid valves used in the NIKE-HERCULES system could be cut in half.

And so it goes. Some savings were tremendous—like the $9.7 million saved by John Quinn, an engineer with the Naval Air Systems Command, when he developed a way to reclaim worn and damaged turbine vanes. Some savings were relatively small—like the $4,283 saved by Air Force MSgt Tommie Lloyd of McGuire AFB, New Jersey, when he found a snappy solution to a sticky problem by substituting rubber bands for masking tape to bind bundles of cargo straps.

Many cost reductions resulted from team efforts.

- Richard Kettering and Merle Meek of the Pueblo Army Depot (Colorado) spent 400 hours of their off-duty time to develop a rebuild procedure for damaged static probes (an instrument used on the NIKE-HERCULES Missile) and thus saved the Army $630,000.
- Morton Memberg and Gerald Smith of DSA's Defense Clothing and Textile Supply Center in Philadelphia retrieved from excess stocks thousands of yards of cotton cloth originally intended for sleeping-bag cases and converted it to needed interlinings for wind-resistant men's coats, saving $751.000.

Frequently, savings are the result of the aggregate effort of many, many people within an organization—such as the $45 million saved in FY 1967 when the Army devised a more direct system of replenishing stocks in Vietnam, enabling it to eliminate Okinawa as a transhipment point.

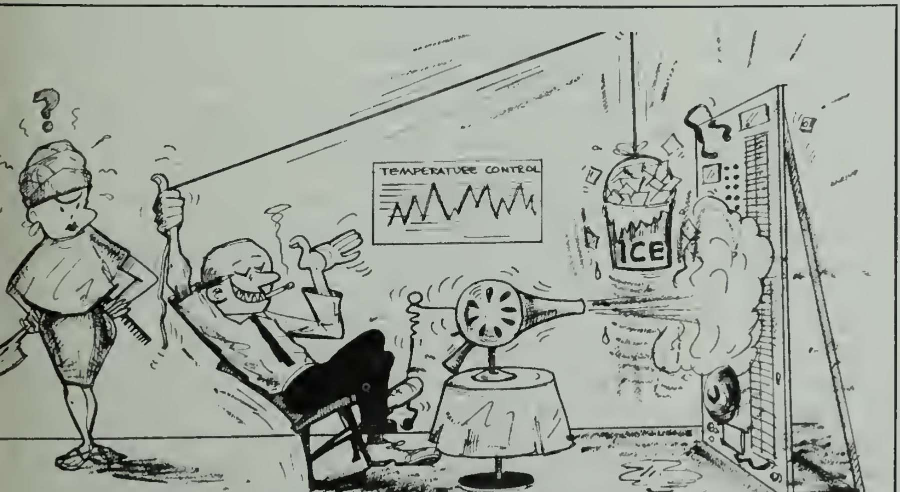
Even some shaggy-dog savings rolled in.

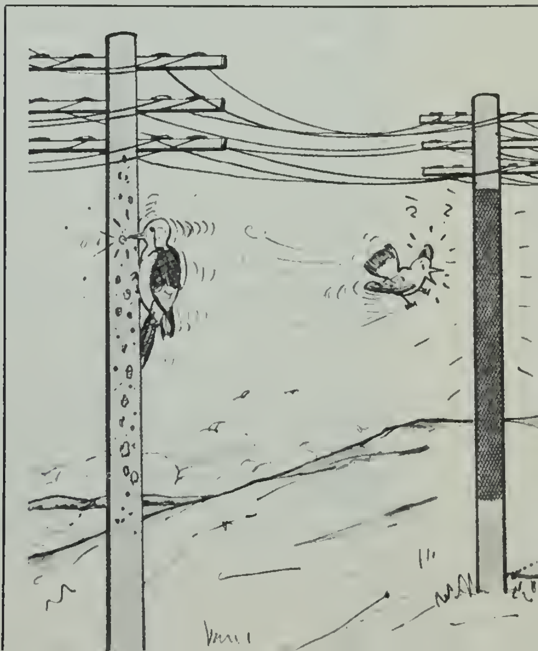
- Sheep and cattle took over the grasscutting chore on thousands of Defense-owned acres—and their owners paid for the privilege.
- Naval Missile Center personnel at Point Mugu, California, trained their pet porpoise to locate a $4,700 target launch cradle that had sunk to the ocean floor.
- Mosquitoes bred at Ft. Detrick, Md. accommodated their appetites to a humdinger of a feeding device whisked up by lab personnel to reduce the bite on Army's budget by $5,600.

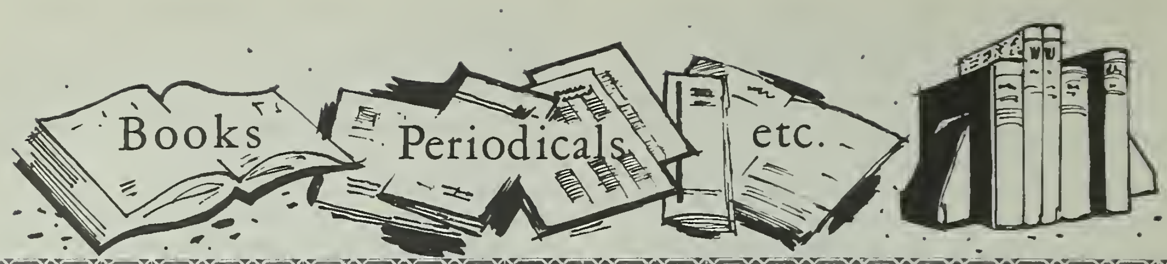
Not all of the lesser creatures were so obliging.

- Woodpeckers pecked 50 utility poles a year into firewood (water and fungi enter holes drilled by the birds and cause rot) at the Louisiana Army Depot until engineers there applied a sure-fire stopper (galvanized mesh screen wrap-arounds for every pole).
- Mosquitoes on Guam stung Public Works Center personnel into substituting a back-packed portable power sprayer for the old method of hand-casting pelletized insecticide, thus enabling the Center to reduce its mosquito-control workforce from 8 men to 1.

Enough for the litany, fascinating though it is. The point is that the terse summaries and mountainous statistics of formal cost reduction reports—though impressive, convincing and quite necessary—never adequately place the accent where it really belongs: on *people.* This shortcoming is not grievous as long as management—at all levels—remains keenly aware that every saving reported is a value measure of a management improvement innovated by a real, live, cost-concerned human being.







Books Periodicals etc.

These reviews were excerpted from "The Friday Review of Defense Literature"—a USAF publication whose editors are: Harry M. Zubkoff (managing); Patricia Brown (periodicals); Eva Brecher (books).

- Office of The Surgeon General, Department of the Army (Editor: Colonel Robert S. Anderson, MC, USA): *Medical Supply In World War II*, Superintendent of Documents, Government Printing Office, Washington, D.C. 20402. 1968. Price $8.25.

This volume describes activities of the various aspects of the medical military supply system as it existed during the war. It includes the complicated process of forecasting requirements for global war and planning procurement. It gives an account of the acquisition of raw materials in the face of unprecedented competition, the construction of factories, and the creation of entire industries. It covers transportation from mine or farm or forest to processing plants, from plants to depots, and from depots to the far corners of the earth, wherever American troops were stationed.

The account is based on hundreds of documents—reports, correspondence, directives, and statistical records—generated as the war progressed; and on the recollections and personal narratives of scores of individuals who participated in the various supply activities, at home and in the theaters of operations.

It is an impressive and inspiring story. The unstinting labors, unending sacrifices, and limitless devotion of medical supply personnel around the world provided the means of treating and caring for some 14 million hospital patients and of dispensary cases beyond counting. However fine the doctor or skilled the surgeon, both would have been helpless without the drugs and instruments flowing uninterruptedly through the smoothly organized channels of medical supply.

This 628-page volume with 149 illustrations, 54 maps, 8 tables, and a comprehensive index is an important addition to the administrative history of the U.S. Army Medical Department in World War II.

- Butz, J. S. Jr., "Technology in the 1970s: Its Problems and Potential,: *Air Force*, May 1969, pp. 36–47.

(*Note*: Mr. Butz is Technical Editor for *Air/Space Digest.*)

The military establishment and the aerospace industry must seek public support by reexplaining their purposes, problems, and methods. If the misdirected charges of waste and military-industrial collusion are not countered through better public understanding and by reform of the DoD managerial techniques, the reduction in R. & D. will seriously hamper defense and U.S. economic development. Work in advanced technology has already slowed down 50 percent in the last 4 years.

The current leadership in the Pentagon appears willing to take the necessary steps to reduce the causes of high cost, technical waste, misjudgment, and failure to meet specifications. Military management has become too top-heavy and too restrictive for the contractor or governmental agency performing the work; the paperwork is excessive and responsible for as much as 50 percent of the total costs of many advanced technology efforts. Future R. & D. contracts should place heavier reliance on exploratory engineering development. "Paper competitions," which force contractors to make detailed predictions based on insufficient data, and limitations on prototypes, which leave mistakes uncovered until the system goes into actual production, have proved very expensive methods of "cost reduction." Cost and time predictions will be much more accurate if the contractors, military, and OSD refrain from trying to design sophisticated equipment down to the last rivet before development has even begun.

The public must realize that it is necessary to maintain two separate military forces. "Forces—today" are necessary for deterrence; "Forces—tomorrow" must be developed through continuing research programs if the U.S. is to maintain its strong military posture. If the strength of either force can be reduced, both Russia and the U.S. will benefit; therefore, the proper policy for the U.S. is to make "Forces—1970."

For 20 years DoD has paid almost the entire bill for pushing forward the frontiers of technology. Spin-offs from the defense industry have had significant effects on civilian industry. Military technology has pushed the performance of machinery to higher levels, created more technological change than any other source in the past 20 years, and provided new jobs and industries.

However, national policymakers have disregarded these facts to the point where military technology has been reduced through lack of public understanding. If funds continue to be diverted from advanced technology to social projects, economic growth could be slowed down, closing a very significant avenue of social change and improvement.

- Benson, Robert S., "How the Pentagon Can Save $9,000,000,000," *Nash Monthly*, March 1969, pp. 32–9 ff.

(*Note:* Mr. Benson formerly with the Office of the Assistant Secretary of Defense, Comptroller, is now on the staff of the Urban Coalition.)

Nine billion dollars could be diverted from defense projects to badly needed social reforms if outmoded and duplicative weapons systems were eliminated from this year's defense budget. Once funded, defense projects are seldom subject to followup review on their merits, and Congress generally assumes that last year's budget allocation is the minimum starting point for this year's appropriation.

The Manned Orbital Laboratory is a prime example of unnecessary duplication. The MOL is in the budget because the Air Force wants "a piece of the extraterrestrial action", the military uses in NASA's spacecraft operation. By eliminating the SAGE-Air Defense Command System and the ABM, both of which are technically and strategically questionable, the Pentagon could save $2.4 billion annually.

Another $1.1 billion could be trimmed from defense expenditures by reducing forces which are no longer credible or are responsive to a threat which has lost credibility. (1) The number of aircraft carriers should be reduced fom 15 to 10. While carriers are necessary to provide air cover in inaccessible regions and for "surge" requirements in non-nuclear wars, there is no reason to use them in extended deployments since they cost 3 to 4 times as much as land-based air support. (2) Marine amphibious training and equipment should be phased out because such operations are vulnerable to tactical nuclear weapons and are not structured logistically for sustained combat. (3) Navy protection for shipping should be reduced since an extended sea war is improbable and jumbo aircraft are closing the cost gap between air and sea transport.

Inefficiency in the use of manpower and in production methods wastes additional millions in public funds. Each year, $550 million could be saved if the Army shortened basic training programs for noncombat recruits, and all the Services reduced by 25 percent their officer assignment changes. Cutting annual leave time to 20 days, except for men on hardship duty overseas, would save $450 million. Inefficient production methods on defense contracts cost about $2.7 billion yearly. If the DoD would assign top financial and engineering specialists to delve into contractors' operations and make appropriate followup reports, much of this waste could be eliminated.

Finally, the U.S. troop commitment to Europe should be reduced. NATO Allies are in a financial position to carry a greater proportion of the West European defense effort. An additional $1.5 billion annually could be saved by cutting our troops in Europe to 125,000 and reducing our NATO-assigned airpower by 25 percent.

- Goldwater, Barry, "Is There a Complex About the Complex?" *Armed Forces Management*, May 1969, pp. 36–8.

Military-industrial cooperation is a vital component of national security. The United States is dependent on a capable military establishment which in turn relies on a broad industrial base. Should the current attacks on the "military-industrial complex" result in a general misconception of the need and value of these institutions, the U.S. position in the world arena and the security of the free world would be seriously jeopardized.

The defense organization has moved too far in the direction of economy and efficiency and too far from defense readiness and force modernization. Real and lasting economies in defense spending are not to be found in cutting R. & D., but in absorbing the increased costs of new advanced weapons by reducing forces needed to support old systems. Only then can the United States hope to keep defense spending at a minimum and national security at a maximum.

Military leaders must be given their proper voice in the determination of defense policies upon which the safety and the protection of millions of U.S. citizens must ultimately depend. Suspicion of the military and a deliberate attempt to minimize its voice in the development of defense policies has seriously hampered our defense readiness and programs for the future. Civilian authority based on scientific guesses and computer findings has replaced sound military advice on training and experience. Military men and scientists both have their spheres of special competence and the two should not be confused or interchanged. In the ABM debate scientists have been endeavoring to tell the military how to defend the nation. Public emphasis has been on those who oppose the ABM rather than on those who know we must make some headway to catch up with the Soviets in missile defense.

The current attacks on the military in general and the ABM-Safeguard program in particular are part of a concerted and well-organized attempt to destroy the military effectiveness of America in the misguided belief that such action might serve the cause of world peace. Opponents of defense expenditures seem to think that if the United States abandons weapons production its enemies will be "shamed" into following suit. This wishful thinking ignores the power realities of the international situation. Peace is best served by a strong U.S. deterrent posture.

- Wool, Harold, THE MILITARY SPECIALIST, Baltimore: Johns Hopkins, 1968, $8.95, 216 pp., summarized by Eva Brecher, SAFAAR.

(*Note:* Dr. Wool is Director for Procurement Policy and General Research in the Office of the Assistant Secretary of Defense, Manpower and Reserve Affairs.)

The military services became aware of the mechanical and technological revolution during World War I, when the need for modern weapons systems, new types of transportation and supply units, and an enlarged administrative structure became obvious. In response to these needs, the Services set up a system of occupational specialties, which was firmly established during World War II.

After World War II, most of these positions were retained, since the U.S., instead of completely demobilizing as it had done after previous wars, maintained extensive forces abroad. The number of men employed in white-collar positions and in positions related to the new military technology increased, while personnel in nonspecialized occupational groups declined. The increased requirement for white-collar workers and skilled mechanics made certain minimum qualifications necessary. Qualitative needs rose sharply and resulted in a consistent trend toward higher educational standards.

The Services have had relatively little trouble fulfilling their personnel requirements. The draft leads many men to enlist in order to have their choice of Service, assignment, and type of training. However, the military must compete with the civilian labor market to retain personnel. Retention of personnel has been a chronic problem, with those in the highest technical specialities tending not to reenlist. Men who enlisted in order to avoid the draft and those with good educational backgrounds tend to separate from the military after their first tour of duty. Reenlistment rates are high among high school dropouts who have fewer opportunities in civilian life.

The military has recently introduced two new policies, Project One Hundred Thousand (1966) and Project Transition (1967). These projects are unique in that they recognize the need to integrate policies on the selection, training, and utilization of military personnel with national social objectives. This integraton of mlitary and civilian manpower policies is a result of a Federal manpower policy geared toward helping groups which are handicapped in the labor market.

An effective program to reduce reliance on conscription must meet the qualitative and quantitative requirements of the military. It must resolve the imbalance between those with little educational background, who find the military attractive because of its opportunities in training, and those with high educational background, who find civilian life more attractive. This gap in quality can be reduced in part by modifying standards and improving utilization policies. Project One Hundred Thousand has indicated that previous standards had eliminated potentially qualified personnel. The project should help meet needs in the less technical occupations and free qualified men to more difficult specialties. At the same time, there must be an effort to increase the number of higher-quality volunteers. Exclusive reliance on pay as an incentive would not necessarily be effective and would certainly be too expensive. Other conditions, such as living and working conditions, and opportunities for advancement, have a great influence on personnel.

- Todd, Richard, "The 'Ins' and 'Outs' at M.I.T.," *New York Times Magazine,* May 18, 1969, pp. 32–3 ff.

M.I.T. is going through a period of academic and administrative introspection, attempting to answer basic questions about its independence and responsibility to society. The growing challenge to the institute's traditional links with industry and Government, especially the DoD, was highlighted by the March 4th "research strike," a gesture of faculty protest against Government abuses of science.

It is not so much the huge Government contribution to M.I.T.'s budget which upsets the campus dissidents as the priorities which the funding reflects. Almost half of M.I.T.'s 1968 budget, including nearly $111 million from the DoD, went to two "special laboratories" located off campus. These labs account for much of the national research on radar-based air defense and missile guidance. They have created the guidance system for the Apollo lunar project and contributed to research on MIRVs and ABMs. Jerome Lettvin, a leader of the protest movement and stern critic of the Vietnam war who nevertheless takes grants from the Air Force, emphasized that it is not the source of the research funds, but their use which is important. While science is apolitical, technology is not, and it is the scientist's duty to guard against the misuse of his efforts.

The scientists involved in the March protest are M.I.T.'s "outside men," who have either disdained or not been chosen for Government work. They claimed to be attacking the misapplication of national talents and resources in general, rather than M.I.T. in particular. They were as concerned about the future misuse of students' talents as about current defense research. The long-range goal of the dissidents was to become a lobby for social change.

However, the strike met with criticism from M.I.T.'s "inside men," those scientists who are as much at home in Washington as in their Cambridge labs. Commenting on the strike, Dr. Ruina (a former DoD official) asked, "What's more effective—to participate in a public clamor or to talk to the President for an hour?" M.I.T.'s president, Howard Johnson, was even more emphatic, "War-related research is a slogan. The only way Lincoln [an M.I.T. lab] is related to war is this: If we didn't have such facilities, there'd be a war, and we'd be on the receiving end."

Nevertheless, on April 29th the institute announced that it would decline all new classified research projects for 5 months while a 22-member panel reviewed its relationship to the military. The predominantly moderate panel includes Noam Chomsky, the politically radical linguist. Its 7-day-a-week schedule indicates the panel's sense of urgency, a result of increased dissident activity at M.I.T. as well as at nearby Harvard.

- "Defense Begins at Home," *The Economist*, May 17, 1969, pp. 46–50.

The ABM system must receive four favorable votes in the House and the Senate before deployment can proceed. Congress must first approve the acquisition and construction of the site for the missiles and radar installations and then approve the procurement of equipment. Each measure requires an authorization and an appropriation of funds. Proponents of the ABM can count on a majority in the House, but the Senate is narrowly divided, with the balance slightly against the system. Although the majority of Senators opposing the ABM are Democrats, the controversy cuts across party lines.

Congressmen who want greater control over military spending and activity have seized upon the ABM to bring to light much broader issues of the congressional role in defense. During the past 20 years, congressional authority in military matters has been concentrated in the hands of a few sympathetic committee chairmen, creating a favorable climate for military expansion. The mood of Congress has changed, however, and legislators outside the traditional pro-military group have begun to assert their opinions, rather than accept the judgment of defense leaders.

Faulty evaluations about the Vietnam war and inaccurate cost predictions on defense projects have generated disillusionment with military judgments. Congressional indignation increased when the Air Force attempted to hide the spiraling costs of the C–5A transport and when it was learned that even the Secretary of Defense had been kept ignorant of the true cost of the F–111's electronic equipment which rose from $610 million to $2.5 billion. In addition, Congress has become reluctant to grant large defense appropriations in the face of pressing social needs. The attempt to curb inflation by cutting Federal expenditures has intensified the competition between civilian and military demands.

- "After Vietnam: The Dollars and Cents of Peace," *Saturday Review*, May 24, 1969, pp. 11–22.

(*Note:* Contributors to this analysis are: Sen. Muskie, Assistant Secretary of the Treasury Weidenbaum, Lt. Gen. Gavin, and Mr. Stark, Director of the Congressional Joint Economic Committee.)

The war has had both negative and positive influences on the economy. According to Weidenbaum, it has contributed to inflation, a higher public debt, an adverse balance of payments, and a lack of public confidence in the Government's ability to control the economy. Nevertheless, idle and under-employed resources were shifted into war production without the use of price controls, the standard of living has improved, and civilian programs have had a proportionally greater increase than military ones.

Weidenbaum also observes that the war has changed the composition of the military budget, with funds for conventional hardware increasing, missile appropriations declining, and aircraft procurement reflecting tactical rather than strategic needs. As a result, automobile, textile, and other traditional manufacturers have an increased share of the defense budget, while the specialized aerospace and electronic industries have a lesser share. The East and Midwest are getting more defense contracts; the Far West is getting less. Meanwhile, the domestic labor problem has been intensified because unskilled laborers can be used in only about 10 percent of the defense jobs.

Weidenbaum and Stark conclude that most of the funds released as a result of peace in Vietnam will be diverted to other defense projects rather than to social ones. According to Stark, only $11 billion of the Vietnam war's $30 billion annual cost will be available for welfare programs, and even this surplus could be eliminated if the surtax were repealed. The real problem of the 1970's will be to establish priorities among the various social projects and to reform the tax structure to help meet the need for increased public spending.

Sen. Muskie takes a different view. He urges that the nation rededicate itself to the priorities of full employment, elimination of racial discrimination, and improvement of urban living conditions. To achieve these goals, we must institute an equitable tax structure, reduce arms spending, and make an effort to reduce dependence on arms for security. In addition, resources must be used efficiently. Local, State, and Federal governments must coordinate their activities and undertake more regional planning. Public participation in planning and decisionmaking must be expanded.

Gen. Gavin maintains that industry is becoming increasingly aware of its role in social development. Private investment in urgent social projects will increase, especially if incentives such as tax advantages are offered. However, if industry is to make a major contribution to resolving the nation's social problems, it must form a constructive partnership with government at all levels. In addition, industry and government must realize the need for compensatory measures to close the gap between the poor and the rest of society. Businessmen must become better informed about the needs of disadvantaged groups and be prepared to cope with the demands of minority groups for greater participation in decisionmaking.

About People Here and There—

CHECKS COST OF CASH

Paying soldiers by check instead of cash will save Oakland Army Base $5,100 over the next three years.

Cash paydays required transporting large amounts of money to the bank. From there, armed guards moved the money to the base finance office where it was counted. The finance office then separated the money by payroll groupings.

Then an officer, acompanied by 12 NCO armed guards and assisted by six agents, paid about 900 men. It was a 3-hour affair.

Now, payment by check eliminates the long waiting lines and work proceeds without mass absences of men awaiting payment. Also, checks are easier to safeguard than cash.

Eliminating 3 hours' nonproductive time for 18 officers and NCO's accounts for the savings.

INTERNATIONAL COST CUTTER

LCDR Michael J. O'Connor of the Canadian Armed Forces, currently serving a 2-year exchange appointment with the U.S. Navy at the Naval Air Rework Facility, Quonset Point, R.I., saved the Navy $49,263 in fiscal year 1969.

A mechanical engineer and well versed in aircraft maintenance, LCDR O'Connor innovated a method of engine inspection that made it posible to make major repairs on aircraft engines without removing them from the aircraft.

The standard inspection process for examining low-time engines, making necessary repairs, and assuring reliable power plants for another tour of duty called for removing the engines from the aircraft. The engines were reinstalled after needed repairs were made. This entire operation consumed 109.4 manhours per aircraft.

With LCDR O'Connor's new system, inspections and the required work operations are now performed with the power plants intact and time involved is 84.3 manhours per craft.

POSTSCRIPT

SSM James E. Rowlett, described in the Spring issue of the *Defense Management Journal* as "Sergeant Suggestion," never quits.

He recently received an $825 suggestion award for an idea having estimated first year benefits amounting to $39,096.

His idea involved a change in supply handling procedures. Supplies are now segregated at the warehouse level by customer group to avoid "double handling" and to assure maximum use of available transportation facilities.

In addition to this award and the 55 awards previously reported in the *Journal,* another 67 of Sergeant Rowlett's have been approved—for a total of 122. 20 more are still pending.

SECRETARY SOCKS IT TO "EM"

A secretary at the Field Wireman Training Course Headquarters, Fort Leonard Wood, Mo., was awarded $100 because she beat a bunch of pole climbers and battalion of Army engineers to the suggestion box.

Mrs. Fay F. Scott noticed that telephone poles used during the Army field wireman pole climbing classes were replaced when they became excessively marred by the spikes on the wiremen's boots.

She noticed also that the wear was only on one side of the poles.

Her idea was simply to turn the worn-out poles 90 degrees, thus doubling their durability.

Mrs. Scott's suggestion will save the Government an estimated $2,000 per year.

FENCE RAIL BECOMES WATER LINE

The hollow top rail of a chain link fence now functions as a water conduit, saving Umatilla Army Depot $1,233. The depot paired two scheduled projects to get this result:

- Relocate 5,800 lineal feet of chain link metal fencing
- Lay a water line.

A study of fencing requirements revealed that the fence to be moved had a top rail of 1¼″ steel tubing that was not required in the proposed relocation. The tubing was well within the standards for water pipe. The tubing was therefore removed from the fence, cut, threaded and used to complete the water line project in lieu of purchasing new water pipe.

STRETCHES POWDER TANKS

The Naval Ammunition Depot, Crane's Research and Development Department recently developed a way to modify 16-inch powder tanks which will save the Navy (and hence the taxpayers) more than $2.7 million between now and June 30, 1970.

Naval history since World War II plays a significant role in these savings. Immediately after that war, there were 13 "battlewagons" in the Fleet. Of these, nine were equipped with 16-inch, 45 caliber guns; only four—*Iowa, Missouri, New Jersey,* and *Wisconsin*—boasted 16″/50's.

In 1966–67, thanks chiefly to developments in electronics, aircraft, and missiles, the U.S. Fleet was built around the carrier and air power. There were, at that time, exactly zero battleships in active service. As a matter of plain fact, only the newer and larger four, named above, were still even potentially serviceable; they were in mothballs. The nine that had used 16″/45 projectiles and associated components either had been scrapped or had been "given" to their respective namesake States for use as mementoes or museum pieces, perhaps even as tourist attractions. Whatever their fate, these older ships had been irrevocably and forever retired from active duty. However, literally thousands upon thousands of Mark 3 16″/45 caliber powder tanks, originally procured for the exclusive use of these now essentially nonexistent ships, were stored at various locations across the country.

The recent renovation and recommissioning of the U.S.S. *New Jersey* for duty in Southeast Asian waters posed many problems, not the least of which was the extremely low stockpile of powder tanks for her longer 16–inch, 50 caliber guns.

Obviously, the *New Jersey* had to be supplied. So plans were drawn to purchase a full complement of brand new powder tanks of the correct size at the lowest bid price of $115 per tank.

At this time Frank Niehaus of NAD, Crane's R. & D.'s Materials Research Division entered the picture.

Frank, a mechanical engineer out of Evansville College, had been the moving spirit behind a program to lengthen 5″/38 caliber shipping containers so they could be used for packaging the longer 5″/54 cartridge cases. Because of this experience, he was asked whether it was feasible to convert at least some of these surplus and obsolete 16″/45 tanks for use aboard the *New Jersey*.

The only difference between the 16″/45 and the 16″/50 powder tanks is the length: the Mk. 4 tank is 7.25 inches longer than the Mk. 3. A survey revealed approximately 37,000 of these shorter Mk. 3 tanks in the supply system, most of them in apparently fair and usable condition.

Thus it was that Frank Niehaus and the members of his project team—Jerry Bellamy and Charlie Wade—proceeded to develop a "cut and weld" method of stretching the seemingly useless old short tank so that it could accommodate the 16″/50 caliber powder bags that were scheduled for early filling at NAD Crane.

The savings figures were solidly and realistically derived. The whole program (for both fiscal years 1969 and 1970) involves the lengthening and renovation of 35,306 Mk. 3 16″/45 tanks.

The cost of buying 35,306 new Mk. 4 powder tanks at the above-mentioned lowest bid price of $115 adds up to a whopping $4,060,190. The cost of converting the otherwise nearly worthless Mk. 3 tanks—taking into account all of the incidentals such as scrap value and shipping charges—will come to $1,337,325. The actual savings realized total a handsome $2,722,865.

Frank Niehaus insists that none of this could possibly have occurred without the generous help of the members of his project team and the full and willing cooperation, the skills, and the expertise of his fellow workers at Crane. He is also grateful for the assistance of many people at SPCC, Mechanicsburg.

The photo shows Niehaus pointing to his tank-stretching weldment.

NO COVER UP

Rust and fungus were the problems for 175 mm. shells Vietnam-bound on pallets with cardboard-plywood covers. The covers absorbed and retained moisture, causing rust and fungus on the shells.

U.S. Army, Vietnam's 1st Logistical Command studied ways to solve the problem and came up with the simplest of solutions: forget the covers. Air circulation would do the rest.

So the Ammunition Procurement and Supply Agency deleted the covers from their packaging requirements. Now the Army will accrue 3-year savings exceeding $950,000 from eliminating the covers' material and labor costs, the added cost of shipping them, and the expense of their removal and disposal.

86-CENT WASHER PLUMMETS TO PENNY

Does it seem farfetched to be charged 86 cents for an item and, after a value engineering study, to obtain the same item for one penny?

Maybe so. But that is precisely what happened recently at DSA's Defense Industrial Supply Center (DISC) in Philadelphia, Pa., when Reginald Riley, a purchasing agent, was called upon to procure 3,474 flat washers.

Mr. Riley contacted the original manufacturer of the flat washer, since the procurement specification cited the company's part number. The washer unit price from this source was quoted as being $.86 apiece.

Convinced that this price was unreasonable for an uncomplicated flat washer, Mr. Riley sought help from Joseph V. Adams, a value engineering specialist in the DISC Directorate of Technical Operations.

A study performed by Mr. Adams revealed that dimensional, material and finish requirements of the item could be fully described and the item could be competitively solicited by using a federal specification (FF–W–92A) covering flat washers.

Mr. Riley followed this recommendation and was able to procure the item on a competitive basis at the price of a penny apiece.

Total savings amounted to $2,952.90.

"THIRD MAN" THEME

When the Defense Industrial Supply Center (DISC) at Philadelphia, Pa., got rid of the "third man" recently, it wasn't playing a part in a spy melodrama.

The Center, a field activity of the Defense Supply Agency, was taking steps to bring about a dramatic cost reduction, however.

Mrs. Catherine McLaughlin, a procurement agent at the Center, was called upon recently to buy 1,000 ring spacers for the Armed Forces. These precision shims are used as components of electronic equipment and devices.

The item was identified to a specific manufacturer and part number. The lowest quote obtainable was $1.10 for each ring spacer.

Mrs. McLaughlin felt the price was excessive and turned to Arnold White, a DISC equipment specialist, for a value analysis. His investigation revealed that the firm named on the item description did not actually manufacture the part but merely acted as a middle man for the actual fabricators.

As a result of the investigation, competitive procurement was recommended by means of soliciting the manufacturers, all of whom were furnished a revised item description specifying dimensions, material and quality assurance provisions.

Quotes were eventually received from 12 suppliers, with an award going to the low bidder who said he could furnish the item at 6 cents each, instead of the originally-quoted price of $1.10.

RESTRICT UNAUTHORIZED CALLS

Sid Bonnel and James E. Dewberry have designed and developed some automatic restriction equipment for Fort Leavenworth's telephones. This equipment distinguishes, on an individual telephone number basis, whether access should be permitted or denied to special "official use only" trunks terminating at the Fort. The device automatically allows direct dial access by official users and restricts unauthorized calls.

Previously, all calls were handled on a manual basis, with restriction handled by operator intervention.

Annual savings of $55,000 are estimated for Fort Leavenworth, but this innovation is applicable to all military installations having special circuits which require a restricting device. Savings are based on the elimination of the need for leasing additional trunks and the elimination of a requirement to purchase equipment to handle increased traffic.

NEW LIGHT ON AN OLD PROBLEM

The light projection system on the Army's telescope mount, M128, was used with reflectors M1 and M2 in the deployment of weapons for an indirect fire role during night operations.

Believing that the system's overall performance was inadequate in artillery and mortar applications Frankford Arsenal requested and received approval to reevaluate it.

Mr. Salvatore M. Adelizzi performed the engineering study which recommended replacing the light projection system with the light aiming post M14. Savings of $466,302 were realized in fiscal year 1969, and an additional $1.5 million are estimated for fiscal years 1970–1971.

COMPUTER SHORTCUTS

Computer managers at the Army Combat Developments Command Experimentation Command calculate savings exceeding $100,000 for fiscal years 1969–1971. Among the actions are:

- $3,000 in computer time during the current year was saved by dealing directly with a computer center rather than through a prime contractor.
- $8,700 (projected at $70,000 for fiscal years 1969–1971) was saved by a revamped system to handle copying workloads.

These savings were the result of suggestions made by Lt. Colonel Phillip E. Hukill. In addition:

- Punchcards and ADP equipment have virtually eliminated the tedious task of manually verifying personnel rosters. This process saved $6,900 in fiscal year 1969, and nearly $21,000 will be saved during fiscal years 1969–1971.
- A $10,400 saving was achieved by a CDCEC group called Team V by devising a means of cutting the number of computer tapes used in a radar-controlled gun experiment from 1,000 to only 200.

WINNERS

A cost reduction certificate of merit seems to be good therapy for the broken wrist of Marilyn Rinehart, 304 Boyes Road, Cheltenham, who receives the award from Captain James W. Cartee, SC, USN, Executive Officer of the Navy Aviation Supply Office (ASO), 700 Robbins Avenue, Philadelphia. James Fitzpatrick (left), 602 E. Rosalie Street, Philadelphia, also a certificate of merit winner, looks admiringly on. Mrs. Rinehart saved the Navy $215,000 last year by recommending the substitution of stainless steel for titanium in slotted leading edge skin assemblies for Navy Phantom II fighter aircraft. Fitzpatrick was cited for realizing a $200,000 savings in glass used in panoramic camera windows used on the Navy's Vigilante reconnaissance/attack aircraft. He recommended discontinuing the purchase of expensive imported glass, and using instead, the products of American manufacturers.

CLERK IMPROVES FORM

Assembling cashier's daily report forms and carbons will soon be a thing of the past as a result of Mrs. Pauline Ratchford's suggestion to publish the form as a three-part carbon interleaved form. The form is used in Army commissaries throughout the world. Preassembling the form will save some 15,000 manhours per year Army-wide at a total estimated savings of $34,400 per year. Mrs. Ratchford is a cash accounting clerk at the Ft. Leavenworth commissary.

REDSTONE SAVES ON REDEYE

The Army Missile Command, Redstone Arsenal, Ala., has the Project Management of the Redeye Missile System. Redeye is an antiaircraft guided missile which is fired from the shoulder. A VECP (value engineering change proposal) has been approved which saved the Department of Defense $1,440,000—$910,000 for the Army and $530,000 for the Navy. Additional savings will accrue on future procurements.

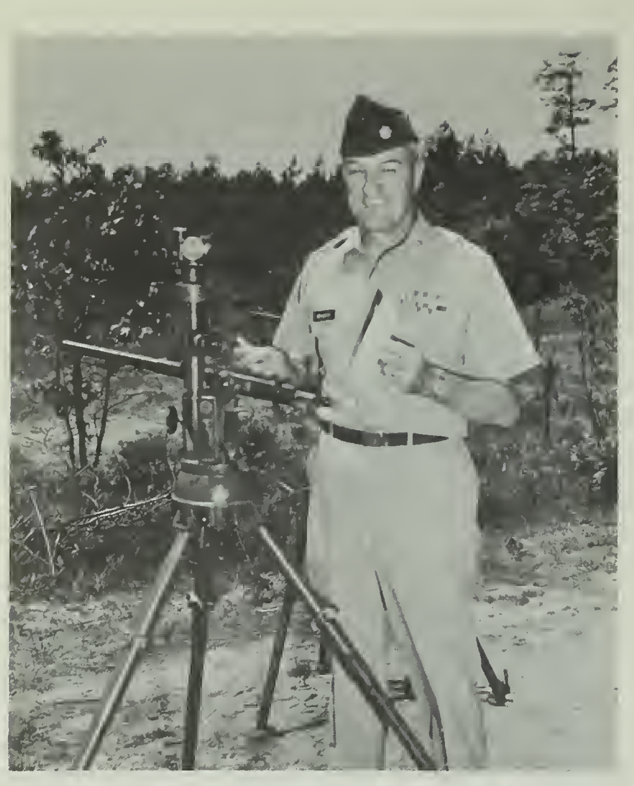
The Redeye Missile contains freon refrigerant to cool the infrared detector cell in the missile in order to acquire and lock in on a selected target more efficiently. The initial design called for a complex, thick-walled cylindrical metal bottle containing an internal freon release device. This was changed to a thin-walled spherical metal bottle and a modified off-the-shelf external release device.

According to Col. J. R. M. Conert, Redeye's project manager, this change has cut 78 percent from the cost of the freon storage and release unit. The VECP was developed by General Dynamics Corp., the prime contractor for the Redeye System.

STAMPS OUT GRIME

Dirt and grime on engine components of a 2,000 lb. forklift called for frequent steam cleaning. Analysis showed that pressure in an oil filter return line connected to the engine crankcase breather tube forced oil up the breather tube and through the breather cap, saturating the engine compartment with the oil and causing rubber fan belts and rubber engine mounts to deteriorate.

A modification relocated the oil return line at a place where oil would not be dispersed throughout the engine compartment. Result: a savings in repair and cleaning costs amounting to over $1,000 a year.



Second Round Knockdown—Lt. Col. John Mabry displays a round used in the M31 14.5 mm artillery training weapon. He suggested the use of the training weapon in place of 105 mm. rounds in Fort Benning, Georgia's artillery familirization program. Mabry's idea, which will save an estimated $1,187,190 annually, netted him a cash award of $1,000.

TOOELE SHACKLES SAVINGS

Mr. Thomas L. Aylor of Tooele Army Depot, Utah, suggested an ingenious savings for tank shipments: substitute a 34¢ steel thimble for a $2.31 shackle. The thimble (or the shackle) holds the cables that are used to tie down armored tanks for shipment.

Mr. Aylor's suggestion not only conserves depot time and materiel, but savings of $2,772 were realized for fiscal year 1969.

ZEROES IN ON TARGET

Jack Sturdivant, a welder at Fort Gordon, tinkered with an idea for several months before he submitted it as a suggestion. His "push" came in a work simplification course, that required students to propose a better way of performing some task.

Mr. Sturdivant's idea was to put a plastic coating on "quick-kill pop-up targets." These targets are used with air rifles for training purposes. The old targets were cut from metal, spot welded and painted white. A ¾-inch dot was the target. After about three months' use, the target was dented, scratched, bent, and the paint was so badly damaged that replacement was necessary.

The plastic coating makes the targets highly resistant to denting and scratching and provides enough reinforcement to prevent bending.

The life of the new targets will be at least three times that of the old ones. Savings are estimated at $4,000 annually.

Mr. Sturdivant's suggestion award included $180 and a certificate presented by MG John C. F. Tillson, III.

PHARMACY PRESCRIBES DRUMS FOR TANKS

Tripler Army Medical Center's pharmacy recently diagnosed a tank problem, prescribed a homemade drum, and dispensed savings amounting to $2,000.

The pharmacy had planned to purchase, at $650 each, several new stainless steel tanks to streamline the routine handling of sterilizing solution, isopropyl alcohol and green soap tincture.

However, SFC Clarence Sakamoto, the NCOIC, noticed some old 55 gallon floor wax drums discarded by the maintenance section. He decided they would work as well as the proposed new tanks. Using a dose of "internal initiative," his section staff, some maintenance personnel, and their free time, four drums were outfitted with spigots and installed.

Mounted 5½ feet above a utility sink, the drums serve up their respective contents on a gravity principle with only the turn of a faucet. These containers with their enormous storage capacity now free other tanks for mixing purposes.

In addition to saving the cost of new tanks, Sakamoto believes his setup will cut in half the time previously spent in preparing and using the solutions.

RACKS UP AWARD

SFC Thomas J. Doss, NCOIC of the 44th Ordnance Company's Maintenance Support Launcher Repair Section (2nd Logistics Command, U.S. Army, Pacific), suggested local repair in lieu of scrapping old rack assemblies on the safety platform of the missile launcher. First-year savings of $54,700 were realized as a result of his proposal, representing the difference between repair costs and the price of new assemblies. Doss received $925 for his idea.

SCAVENGER HUNT

Okinawa's hot, humid, rainy summer months take their toll of motor generators that provide tactical power to the missile systems of USARPAC's 30th Artillery Brigade. Heavy summer maintenance strains parts inventories, often causing technicians to scratch widely for replacements.

CWO Benny Lowry, while rummaging through the Kadena Air Force Base property disposal yard, detected a familiar looking object. A careful check of stock numbers and nomenclature revealed that it was just the generator he needed. As a matter of fact, the property yard had nine of these excess generators, each destined for sale at $1,200. Cost new would have been $10,000 each.

Property books were quickly adjusted as the Army picked up all nine generators for $10,800. An average of $100 each was spent to paint, adjust and place the generators in use. CWO Lowry's scavenger hunt turned up a pot of gold worth $78,300 to the Army.

WATERVLIET UNPADS PADDING

A value engineering study at Watervliet Arsenal, N.Y., unpadded requirements for shoulderpads. The pads in question are issued with the 81-mm. M29 Mortar Systems and are used to cushion the infantryman's shoulders while he is carrying the weapon.

Robert E. Ryan, Jr. learned that seven pads were issued with each weapon and that spare pads were being purchased in large quantities. Study convinced Ryan that these quantities far exceeded the needs of combat personnel. The U.S. Army Combat Development Command reevaluated the requirements for the pad at Ryan's request and recommended reducing requirements to one pad per weapon.

The reduction made it possible to cancel purchase of 18,000 spare pads (costing $13.44 each), thus saving $113,340 in fiscal years 1968–69.

TRIPOD LINKS SALVAGED

After normal service, lower tripod links used on B–52 main landing gear become worn and/or corroded in the attach lugs.

In the past, there were no repair criteria established to rework the links and make them serviceable. The tripod links were condemned when damage exceeded the limits authorized in the basic overhaul manual.

Maintenance engineers at AFLC's Ogden Air Materiel Area (Hill AFB, Utah) developed a repair procedure. Lower tripod links that would have been condemned by the repair shops are now reworked for corrosion damage and repaired to allow an additional wear tolerance of .001 inch (over drawing dimensions).

Tripod links not acceptable under this inspection standard are repaired by installing bushings. Savings realized under the cost reduction program: $119,600 in fiscal year 1969.

LOWEST COST TIRE PER LANDING

In the past, all AFLC Ogden Air Materiel Area tire procurements were awarded on the basis of lowest unit price. No consideration was given to differences in wear quality of the tires. If one contractor's tire was priced at $100 and capable of 25 landings and another contractor's tire was priced at $110 and capable of 50 landings—the contract was awarded for the $100 tire.

Ogden AMA's value engineers recognized that procurement of aircraft tires on basis of lowest unit cost was not always the best procedure. A study was made and the following procedures were established:

- A letter was sent to all tire contractors informing them of the Air Force's intent to procure the coming year's requirement for a particular tire on the basis of lowest cost per landing. The contractors are invited to design, build and qualify the best tire they can to give the Air Force the largest possible number of landings at the lowest cost per landing.
- Upon qualification of the tire by the contractor, test quantities (usually about 150) are procured and tested in the field. A landing index is established for each contractor's tire. This index is agreed upon by both the Air Force and the contractor.
- When the next solicitation is made for tires of the size tested, contractors are informed that the award will be made on the basis of lowest cost per landing. Included in the determination are unit cost, transportation cost and maintenance cost.

Savings from the program in fiscal year 1969: $747,156. Total savings of $2,405,600 are expected through fiscal year 1971.

GOES TO DOGS

A dog-food trailer, designed by Ed Rollings, industrial engineering technician at SAAMA, San Antonio Air Materiel Area, Kelly AFB, Tex., will cut sentry dog feeding costs by $257,682 in the next 3 years. When Rollings first appraised the situation, 30 people were working four hours daily to feed 700 dogs. Since the truck carrying food bowls couldn't enter the kennel area, the feeders had to retrace their steps many times. Decks of rails on the Rollings-designed food trailer hold up to 240 bowls. With only three food handlers and one tug driver, this method can complete feeding the Lackland AFB-trained sentry dogs in 2 hours.

CHECKING FOR LEAKS

A better method of checking for leaks in nitrogen filled lenses used in night vision equipment will save the Army $4,600 annually. The idea won $200 for a Sacramento Army Depot optical instrument repairwoman, Mrs. Gloria J. Johnston.

It was the practice to grasp one to four nitrogen filled lenses and hold them under water (they float) to check for leaks. Mrs. Johnston developed a wire mesh tray with a cover that submerges 13 lenses at a time.

This change reduced leak testing time per lens.

FORT RILEY'S PEO MEETS GOAL TWICE OVER

Change some materials, knock down some buildings, cool some air, close some relays. That is how the Post Engineer Office at Fort Riley beat its fiscal year 1969 savings goal of $37,800 twice over in half a year.

Wainscoting Substituted

One action alone in the Real Property Maintenance and Operation Management area realized a savings of $30,700. This money was saved in a contract for work to be done at Irwin Army Hospital, Fort Riley.

An invitation for bids was issued for the rehabilitation of the mobilization hospital (temporary frame structures). Only one bid was received and it was far above the Post Engineer estimate. An intensive study was made to determine factors contributing to the high bid price. The study revealed that the wainscoting material directed to be used in the original plans was far too expensive for use in temporary structures. A waiver was obtained from higher headquarters to reengineer the project, using a standard wainscoting material. With approximately 59,000 square feet of prefinished wainscot needed in the project, the difference between the two materials ($0.52 per square foot) showed a realized savings of $30,680.

Buildings Demolished

Another improved management action in the Real Property Maintenance and Operation Management area which realized a large savings was reported by the Post Engineer Office in December 1968.

Thirty-nine buildings on the post were found to have served their useful purpose and had become uneconomically repairable. Disposition of the buildings was in accordance with good management practices. The buildings were demolished as new facilities were being constructed.

The savings realized on these buildings was due to the maintenance normally required, and utilities that would have been purchased for them. Estimated maintenance was $19,507.41 per year and the utilities cost $5,759.70 per year or a total savings of $25,267.11.

Air Cooled

Another action which saved $2,373.24 at Irwin Army Hospital concerned control of moisture in air lines at the hospital. Before the action, it was necessary to open the valves of control panels and boilers and clear the moisture from the air lines each day. Failure to clear the lines of this moisture caused equipment to malfunction and close down the boilers which supply heat or air conditioning to Irwin Army Hospital.

Illuminating—This daily and nightly (it's illuminated) cost reduction reminder graces the grounds of the Naval Fleet Missile Systems Analysis and Evaluation Group at Corona, Calif.
Commander J. High, FMSAEG's Executive Officer (on ladder) is shown painting "mercury" over the top to show the organization's achievement. Assisting him is Captain W. Betzer, Commanding Officer, and Mrs. S. Marvick.

A cooler-dryer system was installed in the air compressor lines going to the controls to control the moisture. This eliminated daily clearing of the air lines. It is now required only on a weekly basis.

Prior to installation of the cooler and dryer, it took 2 hours per day to clear the lines, which totaled 730 hours per year. Weekly instead of daily clearing saved 626 hours at $4.27 or $2,673.02 per year. The installation cost was $299.78 leaving a savings of $2,373.24.

Relays Closed

In September 1968 the post engineer office saved $1,300 by analyzing the design of an electrical system at the trainfire range.

An open relay had been used to control an enclosed relay on a stock depot piece of equipment. The open relay caused frequent trouble calls. Removing the open relays and reconnecting the wiring to the enclosed relay each time a trouble call was received saved $590, the cost of open relays, plus $700 which was the labor cost in replacing a relay.

In addition to the above, the post engineer office at Fort Riley counted various smaller savings. With everything added up, the real property maintenance and operation management area of the Cost Reduction and Management Improvement Programs realized a total savings of $61,900 for the first half of fiscal year 1969. ☐

Cost Reduction Conferees—Red River Army Depot recently hosted a 2-day cost reduction workshop jointly sponsored by the U.S. Army Materiel Command and the U.S. Army Equipment Authorization Review Center. Col. Lawrence E. Van Buskirk, Depot Commander, welcomed some 40 conferees who were at Red River to study means for increasing cost reduction savings in the area of long supply, excess and surplus inventory. Pictured at the workshop are (left to right) G. E. Apostolakis, Army Equipment Authorization Review Center, who served as master of ceremonies; Isadore Berg, AMC; Col. Lawrence Van Buskirk; Mrs. Wilma Arnold, Assistant Cost Reduction Program Coordinator at Red River; Gerald Gregor, AMC; and E. W. Bentley, Cost Reduction and Management Improvement Officer at Red River.

NO MAFIA FOR THIS RUBOUT

When Helen Bachin and James Gross got together recently to do away with someone, and a contract was put out, it was not part of a gangland story.

It was the middleman they were trying to eliminate, and their efforts paid off in a contract that saved the Government $15,910.

Mrs. Bachin, a buyer with the Defense Industrial Supply Center (DISC), Philadelphia, Pa., a field activity of the Defense Supply Agency, thought the $4.09 price for a round nut used on release levers for bomb ejectors was out of line with similar items. She referred the matter to Mr. Gross, a DISC equipment specialist, who ran a value engineering review on it.

His study showed that the original equipment manufacturer who quoted $4.09 usually subcontracted manufacture of the nuts to other firms. Further, it was found that by more clearly defining requirements the nut could be obtained from additional sources.

Subsequent procurement of 4,300 of the item at a $0.39 purchase price instead of the original equipment manufacturer's $4.09 meant a $15,910 saving.

The same Mr. Gross also takes his value engineering seriously. His "fresh perspective" in another procurement dramatically reduced the cost of a hexagon nut.

Procurement of the six-sided nut had been by negotiation with the original equipment manufacturer, the sole source of the item. Cost to the Government was $2.27 each for the general usage nut, which is widely used on aircraft assemblies. Mr. Gross' training and experience warned him that the price was too high for an item of this type. He initiated a value analysis on it.

His study pointed out that if certain requirements were more clearly defined, other suppliers might furnish the item.

Supplementary data and quality assurance provisions were developed and the purchase description revised to reflect the new information.

Consequently, procurement was made at a unit price of $0.66 instead of the original $2.27. A total of $1,538 was saved on 955 hexagon nuts purchased at that lower price.

Since DISC buys many such nuts each year for various applications, future savings are likely to be even more substantial.

REAL GRIND

When segmented rotor assemblies used in F–102 brakes wore to .372 of an inch, they were removed and replaced, and the worn parts distributed to various Air Force activities as scrap. Then, technicians in Ogden AMA's Materiel Management Directorate came up with a better idea. They learned that the F–106 used similar segmented rotor assemblies and that serviceable rotors in Delta Darts had a dimension of .373 of an inch. Now, OOAMA's cost cutting plan calls for salvaging the worn F–102 assemblies and grinding them to a slightly smaller size to fit the F–106. Result: a reduction in F–106 replacement rotors and a $16,900 savings in fiscal year 1969.

TWO LETTERS—ONE MESSAGE: REDUCE COST

On May 16, 1969 Secretary of Defense Melvin R. Laird addressed the following letter to the chief executive officers of the 88 major defense contractors voluntarily participating in the Defense Contractor Cost Reduction Program.

THE SECRETARY OF DEFENSE,
Washington, D.C., May 16, 1969.

In my 17 years of Defense service here in Washington, there has never been a period when the socio-economic needs of our Nation focused such critical attention on Defense expenditures. That attention is deserved, for no department of our Government faces a more impressive management challenge.

These times impose a special responsibility on everyone entrusted with the disposition of Defense funds—Government employees and Defense contractors alike. It is an unusual responsibility because the dimensions of the job to be done demand more from our talents than reasonable prudence and average success.

We are continuously being asked to manage better. We are being asked to speed up innovation—to take new, major steps in our quest for more efficient, less costly ways to keep our defenses unassailable.

This Department is moving quickly to meet the test. Since January, we have—

- Established a Joint Logistic Review Board, consisting of high-ranking military officials, to review world-wide logistics support to combat forces during the Vietnam era, to identify strengths and weaknesses and make appropriate recommendations for improvement.
- Instituted a Logistics Performance Measurement and Evaluation System for setting goals, measuring progress, and analyzing results in key logistics programs, functions and activities.
- Applied new emphasis to our in-house Cost Reduction Program, from which we should realize over $1 billion in audited in-house savings this current fiscal year.
- Set the groundwork for convening a Blue Ribbon Panel to review our entire Defense Department activities.

Actions like these will bring us part way toward President Nixon's objectives of making "the most effective use . . . of all the country's resources in achieving the Nation's goals" and accomplishing "Governmental functions . . . with the least possible waste." I say "part way" because Defense cannot go it alone. We must rely heavily on industry's integrity and ingenuity to help us meet these objectives.

I know that your firm—as one of the participants in the Defense Contractor Cost Reduction Program—appreciates the gravity of this responsibility and the immensity of the challenge. I am informed that you and your fellow contributors to this program—through better manufacturing processes, value engineering, closer pricing of subcontracts, and other techniques of progressive management—have recorded cost benefits to Defense exceeding half-a-billion dollars in the 1st half of fiscal year 1969. To me, that kind of visible achievement speaks louder than repeated assurances of shared concern.

It is my sincere belief that this Department and industry—working together—can give our Government the best value it has ever received in the Defense materiel and equipment it needs and can strengthen our procurement practices far beyond the norm of adequacy.

I believe these are realistic expectations—and I know that I can count on your firm and on you personally to do your best to meet them. Further, I would welcome any proposals for improvement that you might have.

Sincerely,

Melvin R. Laird

General Ralph E. Haines, Jr., Commander in Chief, United States Army Pacific offered the Journal these comments on cost reduction as a tool of resource management

U.S. Army, Pacific (USARPAC) is deeply involved in the management of a large investment in men, money, and materiel. In pursuit of more effective utilization, we apply the cost reduction program as a key tool in management of resources. I have heard three objections to the cost reduction program in the Pacific theater:

- Cost reduction is an administrative burden that has no place in a command involved with combat operations.
- In a command as large as USARPAC, businesslike management is, at best difficult without adding the complexity of a cost reduction program.
- The requirement to document and audit claimed savings is not practical in a combat oriented area.

I would like to deal with each of these objections separately.

First, the advantages of applying cost reduction procedures far outweigh the disadvantages as an "administrative burden." Even in Southeast Asia, many organizations are engaged in business-type operations in ports, depots, procurement offices, maintenance shops and headquarters. In these activities, despite the proximity to combat, cost reduction procedures are appropriate.

Cost reduction can even be applied in support of combat operations. Let me cite two examples: Steel airfield matting was substituted for higher cost aluminum in some areas of army airfield construction in Vietnam with a saving of over $17 million. The use of a locally fabricated drift bolt, instead of the issue bridge spike, in timber bridge construction in Southeast Asia saved almost one-half million dollars in 1 year. In both cases the end product was as combat worthy and effective in meeting the requirement as were the more costly alternatives.

The second objection proposes that our job is in itself difficult enough without adding the complexity of a cost reduction program. USARPAC *does* have a big job: nearly 450,000 military personnel and 100,000 civilian personnel are engaged in army activities in our 12-million-square-mile area of responsibility; our investment in materiel (including equipment in the hands of troops, ammunition and depot inventories) is more than $8 billion; and as an additional mission, we operate a $500 million-a-year Army Stock Fund sales program.

A program of this magnitude is made manageable by breaking it up into its component parts, utilizing the tools of planning, programing and budgeting, and the Army Command Management System. These are effective managerial techniques which are geared to the business in which we are engaged. While the Army is not the kind of "business" that is dependent upon a profit and loss statement, managerial practices which promote economy and efficiency can be adapted to the military mission. The Cost Reduction Program is one such practice.

The third objection is directed at the impracticality of documentation and audit requirements. Frequently, when we try to verify savings claimed by subordinates, the savings somehow melt away. There are a number of reasons for this. In Southeast Asia and Korea, where the majority of our resources are concentrated, the tour of duty is normally 1 year. Even with this short tour, people are moving from place to place, and supporting papers necessary to substantiate savings are often not available.

Commanders, nevertheless, want assurance that programs they are being asked to implement are really worthwhile. Part of this assurance lies in the intrinsic value of an economy-oriented program, and part comes from the proof supplied by audit that reported savings are, indeed, genuine. So, despite the many documentation problems, USARPAC's policy is to secure this documentation and audit validation whenever possible.

So much for the three objections. We in USARPAC have a vigorous cost reduction program. It is an integrated component of our command resource management program objectives. It goes a long way toward helping us achieve full value for every dollar we spend. We are proud of the $34 million savings that were validated in 1968—our proof that the program can and does work.

Ralph E. Haines Jr.

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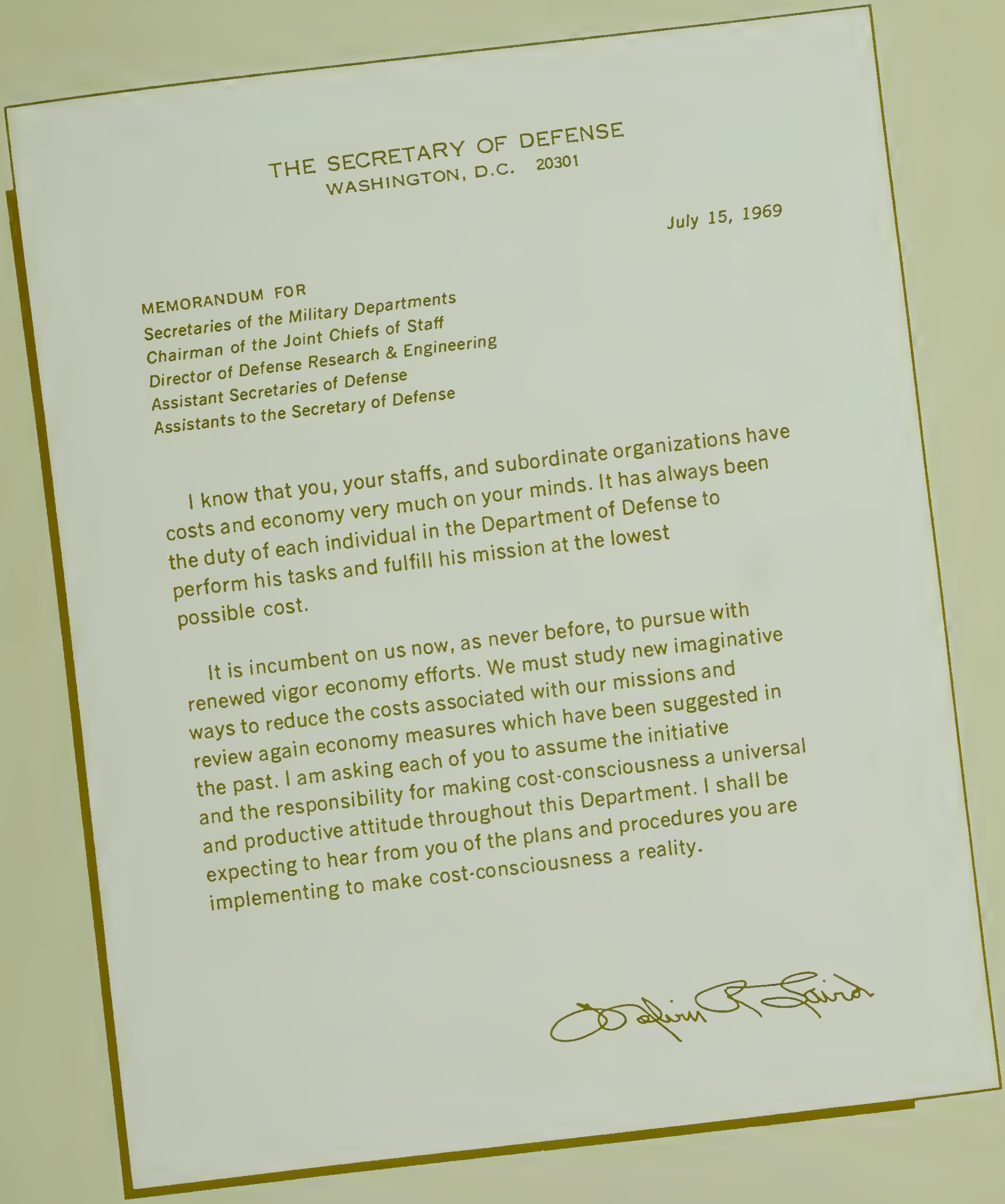

THE SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

July 15, 1969

MEMORANDUM FOR
Secretaries of the Military Departments
Chairman of the Joint Chiefs of Staff
Director of Defense Research & Engineering
Assistant Secretaries of Defense
Assistants to the Secretary of Defense

I know that you, your staffs, and subordinate organizations have costs and economy very much on your minds. It has always been the duty of each individual in the Department of Defense to perform his tasks and fulfill his mission at the lowest possible cost.

It is incumbent on us now, as never before, to pursue with renewed vigor economy efforts. We must study new imaginative ways to reduce the costs associated with our missions and review again economy measures which have been suggested in the past. I am asking each of you to assume the initiative and the responsibility for making cost-consciousness a universal and productive attitude throughout this Department. I shall be expecting to hear from you of the plans and procedures you are implementing to make cost-consciousness a reality.

Melvin R. Laird

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